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# THE INDUSTRIALIST

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No. 17

## ***Report of Bimonthly State Butter Makers' Scoring Contest for 1908.***

Early in February, 1908, the Dairy Department of the College instituted a bimonthly scoring contest for the butter makers of Kansas. The services of Mr. Joel G. Winkjer, expert with the United States Department of Agriculture, Dairy Division, were secured to score the butter. The department outlined a blank report to be filled out by each contestant and to be forwarded to the Dairy Department.

During the interval between the first and second contests the report sheets were revised, and at the time of the second contest, held the last of April, the work was well in hand. After this a contest was held every two months, Mr. Winkjer scoring the butter each time. However, as the usual scorer could not be present at the December contest, Mr. F. L. Odell, of Des Moines, the United States dairy expert in Iowa, was requested to and did score the butter.

The number of entries varied from eight to fifteen for each contest. In averaging the scores for the last five contests we find that H. L. Phillippi, of Salina, is first with an average score of 91.6, entitling him to the silver cup offered by the State Dairymen's Association, E. J. Alexander, of Salina, second with 91.5, and P. J. Springsteen, of Wayne, third with 90.91 $\frac{2}{3}$ . These three contestants are entitled to a diploma, as their average score was above 90.

The highest score of the year, 94, was made in the December contest by Clarence A. Day, of Ottawa.

The scores tell us that there is much that can be done in improving the quality of Kansas butter.

It is interesting and at the same time will give us some light on the causes of faults in the butter, if we look over the detailed scores. The score-card used is divided as follows:

|              |    |
|--------------|----|
| Flavor.....  | 45 |
| Body.....    | 25 |
| Color.....   | 15 |
| Salt.....    | 10 |
| Package..... | 5  |



*Package.*—The package was faulted in the score only four times, but several criticisms were offered. Six makers had used too long tacks in the cover tins and they projected through into the butter, causing rusty spots at each tack. The circles and liners were criticised on seven tubs. The circles were too large in some instances, folding over and projecting from underneath the cover. The liners were usually, when faulted, too long, folding over onto the surface of the butter too far, and sometimes the fold was uneven in width. The circle should only be large enough to cover the surface of the butter inside of the staves. It should not, however, be any smaller than this. The liners should be only long enough to fold over onto the surface of the butter about three-fourths of an inch to one inch.

One tub was not full, one was poorly packed, and the surface on another was uneven. Attention should be given these matters, as they all go toward making up a neat package.

Five tubs were dirty on the outside. This is not pardonable in contest butter, and in market butter the attempt should be made to have the package clean.

Three makers used too much salt on the top of the circle. Only a small handful is necessary. A thick layer causes a useless waste of salt and makes the package unattractive on opening.

A few of the butter makers paraffined their tubs. In three instances this paraffin was placed on too thick and scaled off, discounting the appearance of the package. Only enough paraffin should be used to fill the pores in the wood. When too much is used it is wasted, and also detracts from the appearance of the package.

The method of paraffining suggested by the United States Department of Agriculture in Bulletin 89, Bureau of Animal Industry, Washington, D. C., is as follows:

“The paraffin should be applied in such a way that it will give an even, thin coating which fills all the cracks and at the same time sinks into the wood sufficiently to prevent the coating of paraffin from cracking off. The application may be made with a brush, but it may also be accomplished by pouring a small amount of the melted paraffin into the tub and rotating the tub until the paraffin has flowed over the entire surface, taking care that it does not run down the outside of the tub. By the latter method a thinner, even coating may be applied than by using a brush.

“The temperature of the paraffin is important. If the temperature is too low, the paraffin will cool rapidly, making a thick, uneven coating; if the paraffin is too hot, it will sink into the wood and

the cracks will not be closed up. If the paraffin is melted by holding the receptacle in hot water or steam, it will be found advantageous to heat the tub over a steam jet.

"The paraffin can be applied most rapidly and satisfactorily by heating it to 250° or 260° F. This may be done on an oil stove, but in creameries where steam is always available it will be better to arrange a small tank with a steam coil. By connecting the coil in the bottom of the tank with the boiler and opening the waste valve only enough to allow the escape of the water of condensation, boiler pressure may be maintained in the coil and the temperature of the paraffin raised to the required point."

The cost will vary from 2 cents to 3 cents per 60-pound tub, but this cost is more than accounted for in the saving of shrinkage in the butter.

While the package is given only five points on the score-card, it is to the butter maker's credit to have the package attractive, and of two packages containing the same quality of butter the one that is the more attractive will sell more readily.

*Salt.*—On the score-card the salt in the butter is given 10 points. During the year the following criticisms were offered on the salt content of the butter:

One entry was faulted because of poor salt. Poor salt may result from the salt absorbing flavors from its surroundings, the salt may be impure and be bitter, or it may become wet and spoiled. Only the best of salt should be used in butter making.

Two samples were lacking in salt and three were criticised for containing too much. The amount of salt depends on the amount demanded by the customers and varies in different localities. Each maker should determine what his trade demands and salt his butter accordingly. Only where the amount of salt is very low or in excess is it criticised.

In two samples the salt was not distributed evenly. Care should be taken to distribute the salt evenly over the surface of the butter when it is added, and then to work it enough to mix it evenly all through the mass. Lack of attention to either detail will cause uneven salt, and this is one of the causes of gritty butter.

Of gritty butter, thirteen samples were found. Gritty butter is caused by uneven salting; by impurities in salt which do not dissolve readily; by a salt that is hard to dissolve because in a poor condition; and by too much salt, there not being enough moisture in the butter to put all the salt into solution.

Only the best quality of salt should be used for butter. It



should be nearly 99 per cent pure sodium chloride, and be especially free from magnesium chloride, which imparts a bitter flavor to the butter.

In the creamery the salt should be kept in a dry atmosphere, in a cool place, and, as it readily absorbs odors, in a pure atmosphere.

*Color.*—Color in butter is allowed 15 points on the score-card. A number of the entries during the year were faulted because of defects in the color.

Four tubs were criticised for being too high in color and five for being too light. The depth of color in butter is not considered unless it is very light or very deep, as it is a point that varies in different markets. As with the amount of salt, it is the practice to color butter to suit the taste of the customers.

White specks were found in three tubs. White specks are due to small particles of curd incorporated in the butter, and most often occur in the churning of thin cream that has become highly acid and curdled. Straining the cream when it is added to the churn will help remedy this defect, and no cream should go into the churn that is not run through a strainer.

Mottles are too common in the butter of to-day. During the contest four samples were faulted as being wavy and twenty-two for being mottled. The highest cut on mottles was 2.5 points out of the possible 15. The color of butter is receiving more attention from dealers and consumers to-day than in times past, and it is well for the makers to exercise care on this point.

To rid butter of mottles it is necessary to as thoroughly as possible wash all buttermilk from the butter and to have the salt all dissolved and evenly distributed throughout the butter. Recent work at the New York station tends to show that, if all the casein and albumen are washed from the butter, mottles will not occur, no matter how uneven the salt is. We can safely say, then, that a thorough removal of the buttermilk is of first importance.

*Texture.*—Twenty-five points is allowed on the texture of butter. The texture includes the grain—when a piece of butter is broken it should look similar to the broken ends of a piece of steel; the body—the firmness or the ability to stand up under room temperatures; and the brine—the character and the amount of water and the manner in which it is held in the butter.

One sample showed cloudy brine or milky brine, caused by not thoroughly removing the buttermilk. In this instance the butter was washed only once.

One body was leaky, the brine appearing in large drops. This

is due to a poor incorporation of the water. Churning to small granules, washing with very cold water, salting in the granular state and then working very little will have a tendency to produce a leaky body. A chilled body was found in one sample. This might be caused by churning at a high temperature and then cooling too much for working or by a too sudden cooling.

On four samples weak and salvy bodies were found, weak and short bodies on seven, tallowy bodies on seven, and greasy bodies on ten. There seems to have been a tendency in the State to churn at too high temperatures. This, together with overworking at high temperatures, results in a greasy butter. When churned at a high temperature and cooled to the proper working temperature there is yet a tendency for the body to be weak, and overworking would make it short. When the butter fat is chilled very quickly and overworked at a low temperature, a tallowy consistency is often the result.

Next to flavor, the body of the butter is the most important. The results of the year's contest show that there is room for improvement in this matter. One of the important things in securing a desirable body is the temperature at which the cream is ripened and churned and the butter worked. An accurate thermometer is necessary. Too often the cheap thermometers in use every day are inaccurate. A test thermometer, guaranteed accurate, can be secured for \$1.50 and can be used to test the cheap thermometers. Every butter maker should be supplied with one of these instruments that is known to be accurate.

Besides temperature, it is important to stop the churning process at a point when the buttermilk can be readily removed, and to be careful to neither underwork or overwork the butter. Butter at the proper temperature will stand more working than that which is too cold or too warm.

*Flavor.*—Consumers register the most complaints against flavor. On the score-card 45 points out of a total of 100 are allowed on flavor.

Kansas butter is scored off more, totally and relatively, on flavor than on any other point. During the last year the total cut on the flavor was 489.5 out of a possible 2340, or nearly 21 per cent. The average cut on flavor was about 9.41 points. Comparing this with the other points taken into account on the score-card, we find that the total cut on body was 1 per cent, on color 2 per cent, on salt, .77 per cent, and on package .57 per cent.

The faults in flavor which can be laid at the butter maker's door are three samples with a briny flavor and three samples with



a poor salt flavor. These unquestionably are faults due to the manager and butter maker and can be remedied by making certain that the salt used is only of the best, that it is pure in composition, that it has not become hard because of exposure, and has not acquired strong flavors in any way, and then to not use an excess of salt.

Other faults in the flavor might be laid to the butter maker, as a flat flavor, metallic flavor, and an overripe flavor, as such flavors can be caused by conditions in the creamery. More often in Kansas these are caused by the condition of the cream before it reaches the maker. There were four instances of metallic flavors. The cause of such a flavor is not known for certain, but it is, in the opinion of many judges and butter makers, caused by holding the cream in rusty containers.

In eight samples a flat flavor was found. This is found in cream that is not ripened enough, but that in itself is not objectionable to many people.

Fourteen samples had an overripe, vinegar, or high acid flavor. These are caused by developing too much acid in the cream and may come through the fault of the maker. More commonly the cream becomes too sour in the hands of the patrons. The vinegar flavor is probably due to an advanced stage of acidity.

The worst fault in Kansas butter is the unclean and old cream flavors. Over half of the samples were faulted in flavor because of these conditions. This condition is due to improper care of the cream on the farm, to holding too long in depots before and during shipping, and to shipping too far in warm cars. Also, in some instances the cream may absorb unclean and foreign flavors in the cream-buying stations. In one instance the flavor was cut 15 points and in another 14 points because of the old cream and unclean flavors.

*The Value of Pasteurization and Starters.*—The effect of pasteurization and the use of a good starter may be illustrated by a review of the scores on the flavor of the past year's contest butter.

| TREATMENT OF CREAM.                            | Number of Samples. | Average score on flavor. | Difference in favor of (1). |
|------------------------------------------------|--------------------|--------------------------|-----------------------------|
| 1. Pasteurized and starter used.....           | 20                 | 36.00                    | .....                       |
| 2. Not Pasteurized, but a starter used .....   | 10                 | 34.95                    | 1.05                        |
| 3. Neither Pasteurized nor a starter used..... | 13                 | 34.27                    | 1.73                        |
|                                                | 11                 | 33.77                    | 2.23                        |

The average score on twenty entries where pasteurization above 150°F. and the use of a starter was practised was 36 points out of a possible 45. Where a starter alone was used, as in ten entries,

the average score was 34.95, and where neither pasteurization nor the use of a starter was practised the average score was 34.27.

Except for two samples scoring 37 on flavor each, which were made from cream in very good condition, the average score on the third class in the preceding paragraph would be decreased to 33.77.

In the butter made where pasteurization and the use of a starter were both practiced, the lowest score on flavor was 31. This cream was 5 or 6 days old and stale and pasteurized to only 160°F. The highest score on flavor in this class of butter was 39, made from cream three and one-half days old, pasteurized at 176°F.

For butter made from cream pasteurized at 175°F., or above, the average score on flavor was 36.3; from cream pasteurized at 165°-175°F., 36.1; from cream pasteurized at 155°-165°F., 35.85; and from cream pasteurized at 150°-155°F., 35.5. Here is a decrease of .3 of a point for every 10° the temperature is lowered.

Where 16 per cent or more of starter was used with pasteurization the average score on flavor was 36.2, and where less starter was used, 35.5.

These scores indicate the value of pasteurization and the use of a good starter, but the old cream and unclean flavors in cream can only be entirely overcome by the farmers properly caring for their cream, delivering it often, and by improving the shipping facilities.

*Moisture Content.*—The average moisture content of the contest butter was 13.14 per cent. One-fourth of the butter had between 13-13.5 per cent moisture, one-fourth between 12.5-13 per cent moisture, and one-fourth between 11.5-12.5 per cent. Three samples contained over 15 per cent of moisture and five below 11.5 per cent, two being below 11 per cent. The July butter had the highest average per cent of moisture, 13.14 per cent, and the November butter the lowest average, 12.03½. There seems little variation during the year, though a tendency to be higher during the summer months is evident. The lowest score on the body given was 22 on a sample testing 12.64 per cent moisture. The next lowest was 23 on butter containing 11.6 per cent moisture, while another sample containing 15.23 per cent moisture scored 23.5 on body. The body on other samples containing 15.46 per cent, 15.2 per cent, 10.7 per cent, and 10.98 per cent of moisture, respectively, scored 25, perfect. There is no conclusion that can justly be drawn from so small a number of samples.

*Conclusion.*—The butter maker can do much toward improving the quality of Kansas butter. The workmanship has been at fault many times, and this is something that can only be remedied



in the factory. In too many instances the package was criticised, showing a tendency to overlook the packing of the butter by some makers.

Some objectionable flavors are the fault of the maker and can be remedied by him only. More often, however, the worst fault on the butter is in the flavor given it by the old and unclean cream that is delivered to the creamery. The remedy for this must come through united effort on the part of the producer, the carrier, and the buyer and manufacturer. One step in this direction would be for the creameries to join in the use of a system of paying the producer for his butter fat according to its quality. This would give an incentive to care for the cream as it should be cared for.

ANNOUNCEMENT OF AND RULES GOVERNING THE SECOND BIMONTHLY  
STATE BUTTER MAKERS' SCORING CONTEST.

1. *Time and Place of Holding Contest.*—The first contest will be held on March 6, 1909, and one every two months thereafter, at the Dairy Department, Kansas State Agricultural College.
2. *Who May Enter the Contest.*—These contests are open to all butter makers in the creameries of Kansas.
3. *Size of Package.*—Each contestant is requested to send a 10-pound or a 20-pound tub of butter, preferably a 10-pound tub.
4. *Marking the Butter.*—The package should be plainly addressed to the Dairy Department, Kansas State Agricultural College, Manhattan, Kan. It should also have the sender's name and address placed on a card and tacked on the tub itself. Put no other marks on the package.
5. *Report Blanks.*—This work is intended to be educational, and to this end each contestant will receive a report blank from the Dairy Department on which to make a full report of his method of manufacture.
6. *Butter from Regular Churnings.*—The butter exhibited is to be taken from a regular churning of not less than 200 pounds of butter.
7. *Scoring of Butter.*—The butter will be scored on the date of the contest. It will be stored in the refrigerating rooms of the Dairy Department, held for two weeks, and rescored. The first score will be used in rating the contestants. Samples will be taken and tested for moisture.
8. *Premiums and Diplomas.*—The State Dairy Association's silver cup will be awarded to the contestant receiving the highest average score for the year. This remains in his possession until won by another. In addition to the privilege of holding this trophy, he will be awarded a silver butter trier. To the contestant holding the second highest average score will be awarded a silver butter trier. To each of those whose average score for the year shall be 94 or above, a diploma of merit stating the score received will be awarded. To each of those whose average score shall be 90 or above a diploma stating the score received will be awarded.
9. *Those Eligible to Receive Premiums and Diplomas.*—Only those contestants sending butter to each of the six contests during the year and who send with each entry a report blank carefully filled out will be eligible to receive the premiums and diplomas.
10. *Reports.*—After the second scoring the butter will be disposed of by

the department and the amount due each contestant remitted to him. After the second scoring a report of the contest will be sent to each contestant, together with criticisms on his butter.

11. *Shipping Butter*.—Ship all butter by prepaid express so that it will reach the Dairy Department one day (24 hours) before the time for scoring.

J. C. KENDALL.

EARLE BRINTNALL.

### ***A Troublesome Parasite of the Horse.***

During the last two years this parasite has become very generally distributed over all parts of the State, due to the excessive moisture and flood conditions. It has caused the loss of a considerable number of horses in different localities, and in some instances killed all the horses on a farm.

*Description of the Parasite*.—Thick at its head end, it tapers backwards, ending in a blunt point; its mouth is round, open, and furnished with several hard rings, of which the outer one bears six short, blunt, teeth-like projections, and the innermost a row of closely set, pointed teeth. The female, from  $\frac{3}{4}$  to 2 inches long, has a blunt, pointed tail, but the male,  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches in length, has two lateral projections joined by a rudimentary central lobe. This minute description is given in order to distinguish it from the *strongylus tetracanthus*, a somewhat lighter colored and smaller worm, which it resembles in many respects and which is found in the intestines only, either free or attached to the intestinal wall.

*Life History*.—The worms are found in the horse in two periods of existence. The mature worms are usually found attached to the mucous membrane of the intestinal wall of the large intestine—caecum and colon—with the head sunk deep for the purpose of sucking blood, which gives them the brown or red color. The immature are found sometimes in the same organs, in a small capsule or covering, in small pellets of manure, in cavities or cysts varying in size from a pin-head to that of a hazelnut in the walls of the intestines, and also in the arteries and other structures of the body.

The egg being laid in the intestinal canal of the horse sometimes hatches there, but more often does not hatch until a few days after it reaches the external world. If conditions are suitable in the way of moisture and temperature, the worm may live for several months in this stage in damp places, such as fodder, pasture, or stagnant water. It has become quite prevalent the last year in pastures and meadows subject to overflow from creeks or washings from infected areas. In this stage the worms are taken into the system of the horse. Reaching the intestine of the animal,



they bore their way into the mucous membrane and encyst themselves. Should they find a blood-vessel in their migrating, they are carried into the circulation. It is the most common parasite found in the circulatory system of the horse, through which it may be carried to almost any organ of the body.

*Symptoms.*—When present in the kidney or in the arteries leading to the kidneys, or in the surrounding tissues, a horse is especially sensitive to pressure over the loins. They have been known to cause paralysis.

When found in the brain, an animal when working, suddenly begins to stagger, the eyes become fixed, and the horse shows many of the symptoms of "blind staggers."

When the large arteries of the abdomen are affected, and this is their favorite location in the circulatory system, the animal is frequently subject to colic, which often results in death. This is also the case when found in great numbers in the intestine. It has been estimated that in some localities as high as 90 per cent of cases of colic are caused by this parasite.

*Cause of Death.*—From a thorough investigation of a great many cases, both before and after death, the conclusions are drawn that the parasite evolves a poisonous substance (toxine) which in many instances stupefies the brain or parts of the nervous system of the horse, and in that way causes coma, paralysis, and death of the animal.

In a great many post-mortems held at the clinic and in the dissecting room of the Veterinary Department of the Kansas State Agricultural College and over areas of the State, where no outbreaks have been observed, on careful examination, the mesenteric arteries and coeliac axis (arteries leading to the internal organs, the favorite location of these parasites) have been found to contain enlargements or aneurisms caused by this parasite which frequently contain the living parasite itself. In a post-mortem recently held upon a six-month suckling colt, a large aneurism of the anterior mesenteric artery was found containing a large number of the living worms.

*Treatment.*—Is mostly preventive. Thoroughly inspecting water supply, to see that there are no parasites present in the drinking water. Keep the horses from all stagnant ponds. All surface wells should be inspected. Hay and fodder from swampy lands are to be looked upon as suspicious. Pastures which are subject to overflow and seepage should be avoided. Medicinal treatment consists of a prolonged, careful use of some of the essential oils or other vermifuges. The ordinary spirits of ur-

pentine has proved a fairly good common remedy. An ordinary animal will stand two ounces of turpentine given in a pint to a quart of raw linseed-oil, thoroughly mixed. If the animal is badly affected, the above dose may be given night and morning for two or three days, then omit for a week or two and repeat. The remedy should be discontinued as soon as the animal shows signs of irritation of the kidneys. Some horses are more sensitive in this respect than others. Two to four doses may be given every two or three months to expel the worms from the intestinal tract. If possible, the whole herd should be placed under treatment under the direction of a competent veterinarian as soon as the parasite is found in the faeces or their presence is suspected.

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F. S. SCHOENLEBER.

The Veterinary Department has just issued a valuable press bulletin (No. 174) on "A Troublesome Parasite of the Horse." The parasite is called Palisade Worm (*Strongylus Armatus*). The bulletin says that during the past two years the worm has become quite common in Kansas. As a preventive, the farmer should thoroughly inspect his water-supply and keep the horses from stagnant pools. Hay and fodder from swamp lands and pastures that are subject to overflow should be avoided. For a cure the farmer should consult a veterinarian.

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We notice in the Girard papers that H. L. Call, of whose venture with an areoplane we spoke a few weeks ago, is still hopeful of success. He is building a much better and stronger flying apparatus and intends to show the world sometime this spring how he can visit the clouds by imitating the bird. When a student at this College he showed extraordinary mechanical ability, and we have no doubt that his machine will come close to the solution of the unsolved problem of the ages.

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The annual meeting of the Comanche County Farmers' Institute last Tuesday was the best ever held there. It was voted to have a contest for boys and girls this year. P. H. Thornton offered to give \$25 for prizes and several others stated their willingness to add liberally to a subscription list.

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Thomas Kenet, of Concordia, one of our last year's juniors, has come out best in the recent competitive examination in this congressional district for entering West Point and has received Congressman Calderhead's appointment. Kenet was a corporal in Company C while here.

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*Local Notes.*

The sophomores had a very successful reception in Domestic Science and Art Hall last Saturday evening.

The date of the lecture by Professor Kammeyer, for the Y. M. C. A. and Y. W. C. A., has been postponed to March 5.

The Manhattan Street Railway Company has resumed its work of track laying. If the spring weather will be kind the cars may rumble up main street by April.

Last Monday was the coldest day—indoors—for the past decade. The class rooms were so chilly that several of the teachers had to dismiss the students. Other teachers permitted the students to recite in gloves and overcoats.

Frank Dixon, the great economist, delivered one of the best lectures in the College Auditorium last Monday night that has been delivered here for some time. This was his second appearance on the rostrum of the College lecture course, and we hope it will not be his last.

The senior committee who are working on the '09 class annual report that they are progressing nicely with the collecting of material for the publication. The volume will contain a very large number of high-grade half-tones of campus views and portraits of the Faculty and members of the class.

Mr. Roth, of Butler county, visited College last Friday. He was returning from a trip to Kansas City, where he had sold a lot of cattle. His son, a sophomore, showed him around. Mr. Roth is a prosperous farmer and stock raiser who learned his business in the Swiss Alps, way above the city of Interlaken.

The College Athletic Association has prepared a petition to the Board of Regents asking that the time for athletic trips be extended. At present the limit is only 48 hours and this prevents a team from taking a trip to more than two places within the State, or a trip of any kind beyond the borders of the State, without having to travel day and night.

The new gas plant, built by the Department of Mechanical Engineering this fall and winter, is ready for business. Professor McCormick and his assistants are experimenting to find a Kansas coal or Western coal that will give the best results for producing a gas of proper composition for heat and laboratory use. It seems that a majority of these coals contain too much sulphur for the purpose.

President Nichols came up from Topeka last Thursday and reported progress. None of our bills have passed both branches of the legislature as yet, but several are through the different committees and passed one or the other branch. To judge from the looks of the President, we now believe that the College will come out of all of its many tribulations with banners flying. Two weeks ago he looked different—quite different. We may be able to say more next week.

***Alumni and Former Students.***

J. G. Chitty, '05, and his wife, who was Dolly Ise, senior in in 1905-'06, will move onto a half-section farm near Bigelow, Marshall county, in a few weeks.

Jessie L. Fitz, '04, was married February 3 to Martin L. Holcomb, of Lawrence, Kan. The wedding took place at the home of the bride's mother, near Vinland, Kan., and the young couple will live on the home farm.

L. B. Pickett and Nelle (Paulsen) Pickett, both of the class of 1905, are now living at Whiting, Kan., where Mr. Pickett will operate a truck and gardening farm the coming season. His experience in similar work in Texas was not altogether satisfactory.

W. B. Thurston, '06, has been employed as butter maker for the Seneca Creamery and Cold Storage Company, Seneca, Kan., and has just entered upon his work there. Mrs. Thurston (Stella Campbell, '06) and the baby are visiting home folks a few weeks.

M. W. Sanderson, '98, who has been county surveyor of Marshall county since 1902 and city engineer for Marysville for five years, has moved to Chautauqua county, where he will again be known as a farmer. Mr. and Mrs. Sanderson, with their little girl, made a short visit in Manhattan before going on to Cedarvale, their new home.

L. A. Fitz, '02, expert in grain standardization for the United States Department of Agriculture, is now stationed at Agricultural College, N. D. He attended his sister's wedding and later visited the College, inquiring especially into the experimental milling operations carried on in the Chemical Department. He will visit other institutions before returning to his post.

C. W. Pape, '95, who has been for some years chemist and bacteriologist for the Beatrice Creamery Company, at Lincoln, Neb., died very suddenly February 16, 1909. He had suffered from tuberculosis for many years and a sudden attack of grip brought on the end. Mr. Pape will be remembered by many graduates and former students as a painstaking and able student, and also as an assistant in veterinary science and zoölogy.

A. A. Cottrell, father of nine graduates of this institution, died at his home in Wabaunsee, February 8, 1909. Mr. Cottrell was one of the original Connecticut colony which settled Wabaunsee in 1856 and was a fine type of the sterling citizenship developed in that stirring period of Kansas history. His keen intellect, ready expression and unfailing good temper made him a man of much influence in the community, especially among young men, and many outside the immediate family will mourn his death. His high regard for education is shown by the unprecedented record that he sent every one of his nine children through this institution. Naturally, he has always been one of its warm friends and was a welcome visitor throughout the long period. Mrs. Cottrell is a sister of Prof. J. E. Platt, so long connected with this College, and survives her husband. The sympathy of scores of friends will be with her and the sons and daughters.



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# THE INDUSTRIALIST

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## Brown-Tail Moth

By T. J. Headlee

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No. 18

Brown-Tail Moth.

On the night of July 12, 1904, in Newmarket, N. H., the citizens were astonished to find the electric lights surrounded and shaded to dimness by a mass of medium-sized snow-white moths, to find every wall, board and post upon which the lights shone covered with them, and the next morning to find the streets beneath the lamps carpeted with their dead bodies. Everyone was asking, "What are they, where do they come from, what do they do?" The same phenomenon was witnessed in many other New England cities. These moths were the males and females of the brown-tail moth, that, rising from some points south and west, where they had been bred, had been caught by the wind and whirled northward to infest new territory.

The structure and appearance of the caterpillars give no clew to the reason for calling these insects "brown-tails," but a close glance at the female moth shows why the species has been so named, for each female has the tip of her abdomen covered with a large brush of brown hair, which she sheds over her eggs as she lays them, in such a way as completely to cover them. The male has relatively few dark hairs in the same region. The adult moths fly during July and place their egg masses (two hundred to four hundred eggs in a bunch) on the under sides of the leaves of pear, apple, elm, oak, and all sorts of deciduous trees and shrubs. The tiny brown caterpillars hatching from these eggs consume the surface of the leaves, working outward from the point where they were hatched, leaving nothing but the leaf skeleton. As winter approaches, the young caterpillars bind together with silk some of the leaves of the tree on which they are feeding and fasten the masses so firmly to the branches that the strongest winter wind will be unable to dislodge them. They divide the interior of the nests thus formed into tiny compartments, each large enough to contain from two to twelve of the caterpillars, and, as the weather grows colder, come out to feed less and less frequently until finally, with the destruction of the leaves, they remain within the nests all the time. There they pass the winter

and remain until about the time the leaves begin to unfold in the spring. Then, apparently driven by hunger, they come forth and consume the young and tender foliage until full grown. The winter nests are usually oval in shape, ranging from one to several inches in length, and from one-half to several inches in width. The average nest contains about 300 caterpillars. The average caterpillar during this stage is about one-sixth of an inch in length.

The "worms" become full grown in June and, constructing loose cocoons of silk and green leaves, transform to the pupal stage, from which the adult moths emerge in three weeks.

The injury is done by the caterpillars, which may be found eating the foliage of any common deciduous tree or shrub, and which bear upon their backs and sides bunches of brown hairs that are finely barbed and poisonous. When the caterpillar sheds its skin, as it does five or six times in the process of growth, these poisonous spines are soon mechanically broken away from the drying skin and blow about in the air, falling on people and clothing. They frequently collect beneath the infested trees on clothing drying on the line. When a spine alights on human skin in a favorable position the tiny point enters and sets up an inflammation that results in the formation of a pimple, which soon becomes white-tipped. When the sufferer has many of these pimples they give him intense annoyance, and the "breaking-out" has received the name of "brown-tail rash." One has only to live in a neighborhood where these "worms" are abundant to realize the real discomfort and annoyance that their presence involves. It is humorously said that in certain Massachusetts cities the questions the prospective tenant puts to the landlord are not concerned with the modern equipment of the property so much as with the presence of "worms," and that if the landlord has to confess that his place is infested the prospective tenant refuses it.

The moth may be rapidly destroyed by cutting off and burning its winter nests. This method will quickly rid a neighborhood of the pest for the following summer, and where the trees are small it is simple and practicable, but when the infested trees reach 80 or 100 feet in height, cutting the nests becomes a difficult and expensive operation. As long, of course, as the moth breeds unchecked in neighboring woodlands, it will continue year after year to reinfest all localities cleared of it by winter cutting.

In Europe the brown-tail moth is not a more serious problem than many of our native insects in this country. It seems to be controlled in most cases by its parasitic and predaceous enemies.

The United States government, in coöperation with the Commonwealth of Massachusetts, has been for several years engaged in an effort to introduce and propagate the parasitic and predaceous foes of this insect, but not enough time has elapsed to show whether the experiment will be successful.

Up to the present time this moth has occurred in New England only, but recently the winter nests have been found on imported nursery stock that, being subject to no national inspection, comes into the individual states just as it was packed in Europe. The *Journal of Economic Entomology* has the following to say about this danger:

"Brown-tail moth, *Euproctis chrysorrhæa* Linn. Nurserymen and fruit growers have been considerably aroused over the reception of large numbers of seedlings from Angiers, France, bearing many nests of the brown-tail moth. These shipments were widely distributed in New York state and also sent to other parts of the country, New Jersey, Tennessee, Iowa, and Missouri, at least, having been the destination of such packages. The New York State Department of Agriculture, through its inspection force, has displayed a most creditable activity in locating shipments and insisting upon the observance of rigid precautions to prevent this insect from becoming generally established. All nests are removed from the stock and burned, all infested stock, and that in boxes where nests are found, is dipped in a miscible oil diluted with 20 parts of water, and the packing and boxes destroyed by burning. A most interesting feature is the great resistance of these hibernating caterpillars. There have been a number of records of free caterpillars, that is, those not protected by nests, surviving fumigation under ordinary conditions with the usual amounts of cyanide of potassium, namely, one ounce to 100 cubic feet of space, for two hours, and even for a longer period. The establishment of this pest in widely separated localities can be prevented only by the heartiest coöperation of all importers in adopting the most stringent measures for the destruction of the caterpillars."

On January 9, 1909, Mr. Geo. G. Atwood, Chief of the Bureau of Horticulture of the state of New York, sent the following circular letter to the nursery inspectors of this and other states.

ALBANY, January 9, 1909.

Dear Sir.—For your information I have to advise you that about 75 nests of brown-tail moths have been found on apple, pear and cherry seedlings and quince stocks just received from France. The nests found contain live caterpillars in the usual winter form.

The infested stock, so far examined, was packed in or near Angiers,

France. Hundreds of boxes are now arriving in the United States, and those for this state will be carefully inspected and treated.

I believed you would like as full particulars as possible. It is fortunate that the infested stock was found in the very beginning of the importing season.

Yours very truly,

GEO. G. ATWOOD,
Chief, Bureau of Horticulture.

The secretary of our State Horticultural Society was at once notified of this letter, and the writer of this account promptly dictated letters to all the nurserymen and dealers in nursery stock who came under his charge, asking if they were importing any stock from Europe or New England. Only one was found to have purchased any such stock, and he promised to notify this office of its arrival. He did so and the box of stock imported from France was inspected February 8, 1909, and the pear seedlings were found to bear two characteristic nests of the brown-tail moth filled with hibernating caterpillars. The nests were removed and are now on file at the office of the secretary of our State Horticultural Society. The packing material and all rubbish in the room where the unpacking took place were burned. Every plant in the box was carefully inspected.

News of these findings were at once transmitted to Secretary Wellhouse. Later, I believe, Professor Hunter found some nests on stock shipped into the territory for which he is responsible, and he will probably find more, as Mr. Atwood has notified us of at least another shipment into the same territory.

Section 8, chapter 386, laws of 1907, gives the official entomologists of the State every right to prevent the importation of infested stock. "Sec. 8. That in order to prevent the introduction or spread of any injurious insect pests or plant diseases brought into the State of Kansas, no nursery stock shall be brought into the State nor offered for sale within the State without having previously been properly inspected, as shown by an accompanying certificate. If, however, by reinspection by either State entomologist, their assistants or employees, injurious insects or plants are found, the nursery stock thus inspected shall be subject to the provisions of section 6 of this act."

There is, however, always danger through careless handling and railroad accidents that some of the injurious insects may escape, or that ignorant or dishonest dealers in nursery stock may bring in infested stock without having it examined. A national inspection law, which would require the inspection of all such stock at ports of entry, would do away with these dangers.

No particular credit properly belongs to either of the official en-

tomologists of Kansas. They did simply what was their plain duty after being duly warned. In fact, had they failed to act promptly, they would have been guilty of gross negligence. Too great credit, however, can not be given to Mr. Atwood, of New York state, who went so far out of his way to help keep other states than his own clean.

T. J. HEADLEE.

The Competitor of the Panama Canal.

Comparatively few Americans are aware of the fact that our neighbor on the South, the Republic of Mexico, is, like ourselves, engaged in the construction of an interoceanic and Oriental trade route. In fact, the Mexican project has been in operation for a couple of years, though not yet fully completed. This route, called the Tehuantepec Route, is a combined rail and water route crossing the Isthmus of Tehuantepec in Southern Mexico, the railroad link being about 180 miles in length.

Shortly before the opening of the Tehuantepec Route, Mr. John F. Wallace, in the *Railway Age*, showed that this route will be able to successfully compete with the Suez Canal for Oriental trade from the Atlantic ports of Europe and America. It will also attract a considerable portion of American transcontinental trade.

The owners of the Tehuantepec Route, Messers. S. Pearson and Son and the Mexican Government, believe that they will have the advantage due to eight years of successful operation by the time the Panama Canal is opened to traffic. During this period they hope to establish a profitable trade which, once established, will be difficult to divert to the canal. Even after the Panama Canal becomes firmly established as a trade route, there will still remain a considerable traffic for which the Tehuantepec Route will be the natural and most advantageous one. The distance from Coatzacoalcas, the Gulf terminus of the Tehuantepec Route, to New York and other Atlantic ports is about the same as from the Atlantic terminus of the Panama Canal. The Pacific terminus of the Tehuantepec Route is, however, about 1250 miles nearer to our own Pacific ports and the Orient than Panama. The friends of the Mexican route believe that, taking into consideration the time required to move the freight across the Isthmus, a saving in time of about four days will be effected, due to the shorter distance. This saving in time will be a decided advantage to fast freight, while the extra cost of making the transfer across the Isthmus of Tehuantepec will be more than balanced by the saving in distance and time of the vessel.

The history of the development of the Tehuantepec Route is one

of absorbing interest, extending over a period of 390 years— from Cortez to Diaz.

The Isthmus of Tehuantepec was discovered by Cortez in 1520, by an inspection of the old Aztec coast charts. He immediately sent out a reconnoitering party, which reported so favorably upon the harbor at Coatzacoalcos and the great navigable river stretching far inland that he at once recommended it to Charles V of Spain as a favorable route for Oriental trade—the first conception of the Tehuantepec Route.

However, little was done by the Spanish government to open a trade route across the Isthmus, though the Spanish assembly did, in 1814, authorize the opening of “a canal across the Isthmus of Tehuantepec in preference to Panama or Nicaragua.” It will be noted that this was before the advent of the railroad.

The first extensive railroad surveys were made in 1850, under a charter from Santa Anna, which was later annulled before work had been started. In 1852 (?) the Mexican congress arranged for a proposition on an international competition to open a route across the Isthmus. The contract was obtained by a company of Americans and Mexicans, but it, also, was annulled before any work was done. Finally, in 1879, two other concessions in the meantime having been granted and annulled, Mr. Edward Learned, of New York, obtained a concession to construct a railroad with a subsidy of \$7500 per kilometer (about \$11,250 per mile). This grant was terminated in 1882 for failure to complete the construction in the specified time. The road, however, had been started and about 25 miles built. At this point the Mexican Government assumed ownership and, after several unsuccessful attempts, the road was at last completed across the Isthmus, but was hardly in a serviceable condition.

In 1898 the government entered into a partnership contract with the well-known engineering firm of S. Pearson & Son, Ltd., of London, by which the firm became half owners and administrators of the work.

This contract contemplates the complete rebuilding and ballasting of the railroad, with the addition of a future second track if the traffic demanded it, the construction of terminal harbors with wharves equipped with railway tracks and electric cranes for the rapid handling of freight, and the construction of terminal yards for the railroad. The terminal works were of the same general design for the two ports as far as natural conditions would permit. At Coatzacoalcos, which is the terminus of the Tehuantepec Route on the Gulf of Mexico, the terminal works comprise, in addition to

the usual complement of buildings, a railroad freight yard about at right angles to the river, and wharf service tracks extending along the river front in the rear of the wharves, with the necessary tracks leading onto the wharves. On each wharf is situated a warehouse, and in the rear of each warehouse is a set of two depressed tracks having such an elevation that the floor of the car is brought level with the floor of the warehouse to facilitate the handling of freight.

The site occupied by the wharves and yards was originally a swamp. This has been filled in with sand obtained from the sand dunes north of the Tehuantepec railway, about one and one-half miles from the river. The sand for this fill, amounting to about half a million cubic yards, was all hauled on standard flat-cars, the loading and unloading being done entirely by hand by the native Indians, which, for this work, proved to be efficient and reliable workmen.

The depth of the sand fill varied from one or two feet to a maximum of about nine feet, the surface being ballasted with about four inches of coarse, clean gravel, to prevent the fine sand from blowing and washing away. The wharves, with the exception of the old wharf built several years ago, are modern steel structures, founded on screw piles and equipped with electric cranes and capstans. The main wharves are about 400 feet long, with an extension of about 140 feet, and connecting pieces between wharves having a length of about 260 feet, making a total length over all of about 800 feet. On each wharf is a warehouse, approximately 400 feet by 100 feet, of light steel frame construction sheeted with corrugated iron.

The main wharves in front of the warehouses are about 40 feet in width, with a timber deck, or floor, nine inches thick, the lower course being four inches creosoted lumber and the upper course being a five-inch untreated yellow pine. Extending along the entire wharf frontage are a coping piece and fendering of greenheart lumber, imported at great expense from Northern South America. It is thought that under severe climatic conditions and rough usage the durability of this greenheart exceeds that of any other known timber.

On the wharves in front of each warehouse are three standard-gauge railroad tracks and an electric crane track. The crane track is so located as to straddle the outside railroad track, and there is sufficient clearance under the cranes to permit the passage of trains. The cranes have a boom of sufficient length to serve all three railroad tracks, and their utility is still further

increased by covered hatchways in the warehouse roofs, through which the cranes can handle freight directly from ship to warehouse, or *vice versa*. When all of the projected wharves are completed there will be a continuous wharf frontage of more than one and one-fourth miles.

The harbor at Coatzacoalcas lies at the mouth of the river of the same name. The river enters the Gulf in one solid stream between a headland about 25 feet high on the right bank and one about 70 feet high on the left bank. At the mouth of the river is a bar which maintained a fixed position and uniform depth of 13 or 14 feet from 1848 to 1896, when the first attempt was made to increase the depth of the channel. Inside of the headlands is one of the finest, deepest landlocked harbors to be found at the mouth of any river. It is practically unlimited in length, and of sufficient width to accommodate the largest class of merchant vessels. Along the wharves the minimum depth is 32 feet, increasing in mid-stream to more than 50 feet in many places.

The depth of water at the harbor entrance has been increased by the construction of converging jetties similar to those employed so successfully at the mouth of the Mississippi. The form of construction employed in these jetties is that known as the rubble mound type, which consists simply of loose rocks dumped along the desired line, the largest rocks being reserved for the outer layer where the wave action is most severe. The jetties are built up to a height of about six feet above mean tide, with a top width of about fourteen feet. At the outer ends the jetties are protected against wave action by an outside course of twenty ton concrete blocks.

The work of construction was carried on at the ends of the jetties by means of twenty ton steam locomotive cranes running on broad guage tracks. Back of the cranes were two standard guage tracks which served to supply rock for the construction. The rock was taken from the cars in the rear by the crane and swung around to the sides and front, thus building the jetties out ahead of the track without the use of trestle work. When the end of the work had been built out to as great a distance as the crane could deposit material, the tracks were extended and the crane moved ahead.

During the greater part of the year the weather was very favorable to work on the jetties. During the months of November, December, January, and February, however, the Southern Gulf coast is subject to frequent severe storms of wind and rain, locally known as "Northers." These Northers produced such a heavy surf as to

make work on the jetties impossible. The average duration of the storms was about two days. About the middle of October, 1905, one of these storms, of unusual severity, arrived rather unexpectedly. Not having fair warning, the superintendents on the jetties were unable to make sufficient preparation for heavy seas, and a great deal of damage was inflicted. So much of the rock was washed away from the end of the west jetty that the crane tipped over into the Gulf. The trucks, engines and boom were recovered, but the boiler could not be found. Much damage was also done to the other portions of the work by this storm. The rainfall during this storm amounted to more than fourteen inches in thirty-six hours.

At the Pacific terminus of the Tehuantepec Route the improvements are similar in design to those at the Gulf terminus, with the exception of the harbor. On the Pacific there is no natural harbor, and the wave action is much more severe than in the Gulf. To meet this condition a double harbor has been constructed. The outer harbor is simply for anchorage and is protected by two breakwaters built out into the Pacific. The inner harbor is separated from the outer harbor by a heavy concrete wall, behind which has been dredged a basin. This inner basin is thoroughly protected, and in it ships can come to dock and take on or discharge cargo in any weather.

The estimated cost of the harbor improvements at the terminals of the Tehuantepec Route was about \$16,000,000, United States currency; but, as has been the case with nearly all works of great magnitude constructed within the tropics, the actual cost has far exceeded the estimates.

The climatic and general conditions at Tehuantepec are very similar to those on the Isthmus of Panama; and, as at Panama, the progress of construction has been slow and painful, marked by many failures and severe epidemics.

As is usually the case within the tropics, the most difficult problem to solve has been the labor question. This includes all classes of labor, from the general superintendent to the men who handle the shovels. Concerning common labor, Chinese, Japanese, Jamaica Negroes, American Negroes and native Indians were employed. On the whole, the native Indians gave the best satisfaction and were employed in far greater numbers than any other class. When one learns that these Indians, previous to starting to work with the contractor, had never even seen a "modern shovel," he ceases to wonder at the high cost of work on the Isthmus of Tehuantepec, and on other tropical projects.

The question of securing skilled labor for superintendence was even more difficult to solve than that of common labor, and there never was a sufficient force of competent men on the Isthmus to adequately care for this part of the work. The salaries paid were good, averaging about 50 per cent higher than in the United States. However, the isolation and conditions of living were such that not many men could be induced to stay more than a few months, and the man who stayed a year was an "old timer." Not only was it difficult to retain men on the Isthmus, but in 1904 and 1905 it was extremely difficult to get them even to go there at all. This was largely due to the reputation which that country had acquired as a centre of yellow fever and malaria. This made men reluctant to accept positions there, and new comers nearly always exhibited considerable uneasiness. The old timers often derived considerable innocent(?) amusement from this mental state of the new arrivals.

This sport was generally indulged in at the dinner table when there was a good company present. New men on the Isthmus were quick to note the fact that their Northern clothes were sadly out of harmony with those worn by their companions. They invariably made early inquiries as to the best place and manner of having clothes made. This was the moment eagerly awaited by the "old timers." The conversation on such occasions would generally run something like this:

New Comer: "Where is the best place to have clothes made?"

Old Timer No. 1: "O, any of these tailors around here can make clothes good enough for this place."

Old Timer No. 2: "Jones was about Mr. New Comer's size. I understand they are going to auction off his clothes to-morrow night."

Old Timer No. 1: "That's so, Jones *was* about New Comer's size. The same build, too. And his clothes are all new, he'd only been here a couple of weeks."

Old Timer No. 3: "Fellows of his build don't generally last long here."

New Comer: "Who was this Jones?"

Old Timer No. 1: "He's a fellow that died of yellow fever day-before-yesterday. Mighty fine fellow, too."

Impressive silence. After dinner New Comer goes to his room to think it over. However, after a few weeks the fear of being stricken down by some dread tropical disease gradually wears off and the new arrival gradually awakes to the fact that, not yellow fever, but poor board, is the scourge of Tropical Mexico.

When one is residing in a country where he knows iguana (a species of large lizard from two to three feet in length) to be a delicacy, he naturally becomes suspicious, especially when fowl(?) is served, the general anatomy of which is suggestive of young alligator. The cook, too, was generally a Chinaman or a native, and his methods were always open to suspicion. One man ate poached eggs and toast for breakfast every morning for fifteen months. He justified such a diet by the argument that these articles were less easily contaminated than most others. Some of the men tried boiled eggs, but they were not always fresh. However, there remained the poor consolation, that, after passing through the hands of the cook, all articles graded about the same in the scale of cleanliness and digestibility. So it really didn't make much difference whether one ate bread, iguana, or monkey.

It is probable that at Panama, with Americans in charge of the boarding-houses and frequent Government boats supplying seasonable food, the conditions are much better. However, even under the better conditions, it is well known that Americans do not, as a rule, care to stay for very long periods on the Isthmus of Panama.

L. E. CONRAD.

College May Get New Cannon.

If a certain bill which Senator Curtis has introduced in Congress passes, the College Military Department will get a big saluting cannon and a machine gun, and the city of Manhattan will receive the two old cannon which are now taking up space in the Armory. These two old cannon are property of the government, but are of no use. They are obsolete, having been issued in 1861 when the war broke out. In other cases of this kind old cannon have been given by an act of Congress to cities and placed in parks or cemeteries. For some reason the government will not allow them to be given to the school where they have been used, but it will allow them to be given to the city in which the school is located. As soon as this bill is passed and the Military Department is relieved of the old war relics, it will receive a large salute gun and a rapid-fire or Gatling gun. The salute gun is stationary and will be placed at some spot on the campus and kept covered with canvas. It will be used in firing salutes such as are given when the governor makes a visit, and on other occasions. The machine gun will be one of the latest types, with a capacity of 800 shots per minute. This will enable the department to give machine gun drill to the cadets.—*Daily Mercury*.

Local Notes.

Winter term will close March 26.

Manhattan will soon have an alfalfa mill.

The classes in woodwork number 350 members this term.

A baby girl was born Tuesday to Prof. and Mrs. G. C. Wheeler.

Professor Remick enjoyed a visit from his brother and mother last week.

The Entomology Department has recently installed a low temperature incubator, for breeding and observing insects.

Professor Kinzer bought a fine Percheron mare at the annual Robison sale at Wichita last week. The price paid was something over \$800.

The *Kansas Aggie*, the new organ of the classes in the printing course, is out. It is an eight-page three-column quarto, and a typographical beauty.

Another victory! The McPherson College team was defeated last week in a spirited basket-ball game at the Y. M. C. A. gymnasium by a score of 41 to 24.

The Dairy Department is making preparations to make ice-cream for the College retail trade. The INDUSTRIALIST will announce when the "season will open."

Prof. J. E. Kammeyer will lecture, March 5, in the Auditorium for the benefit of the Y. M. C. A. of the College. His subject will be "Benedict Arnold, His Patriotism and His Treason." Admission, 25 cents.

The Union Pacific will run a special train to Fort Riley, March 1, for the benefit of the students in animal husbandry who are going to the post to judge horses. Besides the classes in stock judging, many other students will make the trip.

The Horticultural Department is overhauling its spraying machinery so as to be ready for the battle with the many orchard pests as soon as the season opens. One of the assistants said to the local editor yesterday: "A squirt in time saves nine."

The Printing Department this week installed a 32-inch Oswego power cutter. This is one of the newest patterns out, is automatic, and in every particular a first-class machine. It was purchased through the Great Western Type Foundry, at Kansas City.

The *Wisconsin Farmer* gives Prof. A. M. Ten Eyck prominent mention as one of the most successful products of its State University. It devotes the entire front page to an outline of the work he has done in the several institutions where he has held positions.

The Ernest Gamble Concert Company played in the Auditorium last Wednesday before the most appreciative audience that has listened to a lecture course entertainment this season. Mr. Gamble's company includes, beside himself, Miss Verna Page, violinist, and Sam Lamberson, pianist. All of them are artists.

The College has again lost one of its children. After only a few days of illness with a severe case of the measles, Miss Marguerite Dion died last Monday at her home near Keats. Miss Dion was a member of the freshmen class, a bright and sweet young woman, and a sunny character. The bereaved parents have the sympathy of her many friends at the College.

With regard to our appropriation bills now before the State legislature we can only say at this writing that they are still on the docket and that their fate is not decided, though they have been before the ways and means committees of both houses and have been variously cut and slashed by them. Another week will decide whether the College is to grow and develop the next two years or to remain stationary. An educational institution must have means if it is to grow.

Floyd Howard, foreman of the College farm, returned from Idaho last Monday, where he attended the opening of a strip of irrigated land near Twin Falls. He did not invest, however, deciding that he could get cheaper and better land in older irrigation openings.

Alumni and Former Students.

Elmer Bull, '08, writes from Redding, Cal., that he is at work there in building operations.

Philip Westgate, son of J. M. Westgate, '97, and Inez (Wheeler) Westgate, '05, was born January 4 at Lanham, Md. — *Alumnus*.

B. F. Snodgrass, former student, and Gertrude (Conner) Snodgrass, '05, are the parents of a son, Glen Milton, born January 12.

Minnie L. Copeland, '98, is head nurse in the Santa Fé hospital at La Junta, Colo., and likes her position the best of any she has yet occupied.

Changes of address: Geo. M. Logan, '02, 305 Everett building, Akron, O.; R. W. Bishoff, '97, Leupp, Ariz.; T. W. Buell and Marian (Allen) Buell, '04, Grand Prairie, Tex.; C. J. Axtell, '04, 17 Barrett street, Schenectady, N. Y.

B. H. Pugh ['92], of the Pugh Manufacturing Company, has returned from Omaha, Neb., where he closed a contract with the Luninger Implement Company to handle no other machine of the kind except the ones manufactured by Mr. Pugh. This company is one of the largest independent jobbers of farm machinery in the United States; that is, it buys all kinds of makes of machinery and distributes them over a wide area of territory. Mr. Pugh feels well pleased because he only began manufacturing machinery to plant and harvest potatoes a little over a year ago, and there are several firms in the East manufacturing similar articles. The last share of stock in the Pugh company was sold recently to one of the most prominent capitalists in Topeka. From present indications a warehouse will have to be added to the plant in the near future, as more room is needed. — *Capital*.

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| K. W. STOUDEB, D. V. M. (Iowa State College).....                     | Assistant Professor of Veterinary Science |

(Board of Instruction concluded on last page.)

# THE INDUSTRIALIST

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## *Selection and Preparation of Food.*

The food problem of to-day is a broad one. Increasing knowledge has brought new responsibilities. Not many years ago all that the most intelligent housekeeper could do was to prepare for her family food which was palatable and presumably wholesome. The selection of the food was largely a matter of chance. Few housewives knew that the ordering of the dinner meant more than a passing fancy. If appetites were satisfied they considered their duty done. To-day the same intelligence implies a knowledge of the body requirements and of the nutritive value of food materials, and carries with it the responsibility of furnishing to the family the food which will best supply the needs of the body.

The purpose of food is threefold. It serves as the material out of which new cells and tissues are made; old, worn-out cells replaced, and energy in the form of work or heat derived. Growth and activity of body depend on whether the food supplied is in proper amounts and of proper quality. There is needed a greater respect for food and its functions in the body—a better knowledge of its effects on the daily output of energy and its relation to health. It is therefore necessary that an elementary knowledge of the composition and food values should be recognized as an essential part of education. With the aid of our chemical laboratories and such students as Chittenden, Wiley, Schaffer, and others, it is possible to give to the housewife as well as to the student a knowledge of food which will yield more far-reaching results in the community than many at the present time realize. There need be no apology for the subject. There is plenty of theory behind it and much educational value, both in methods and reasoning.

It is true that the study can not be taught as others, since no hard and fast rule can be given either as to quantity or quality of daily diet. But there are certain general facts known which will serve as a guide and enable each individual who will study them to choose a diet that will best meet his needs. There is a very intimate connection between the chemical composition of the substances of which the body is composed and the composition of the



food materials. The chemical substances of which the body is composed are very similar to those of the foods that nourish it, since they are made up of the same chemical elements. There are from fifteen to twenty of these elements; C, H, O, N, Ca, P, S, however, being the most abundant. They are so combined as to form compounds which enter into the different food materials. The organic compounds are classified under three heads, viz., proteids, carbohydrates, and fats. Since the food of man is composed mainly of organic materials, these three groups are of first importance.

All vegetable and animal foods, whatever their nature and origin, are composed mainly of representatives of one or more of these groups. The body has need also of certain inorganic salts, but they are largely aids to nutrition, contributing in some way to the regulation of the nutritive processes rather than as a source of energy. The questions that confront the housewife are, naturally: What are the requirements of the body? How much food is required to maintain health and strength by the ordinary individual doing an average amount of work daily? How much of this food should be proteid? How much carbohydrate and fat? How may this diet be varied to meet the requirements for different conditions, such as different ages and different amounts of work? These are questions of vital interest, but are not easily answered. Here it is that we turn to the chemist for help. He has given time and thought to the consideration of just such questions and has given to us "standard dietaries" which are based on scientific data combined with experimental evidence. These dietaries are sometimes called experimental and sometimes statistical, according to the method used in formulating them. An experimental dietary is the result of observations made in many countries on the dietetic customs and habits of the people and the effect of different nutrients upon individuals. The statistical dietary is obtained by the study of the actual food consumed by large numbers of people. It may be argued that neither method is perfect, yet from a careful study and comparison of these dietaries it is possible to determine very nearly the true requirements of the body.

Bulletins are issued from time to time by the Department of Agriculture which any one may have for the asking, which will give the data of all these experiments, also suggested dietaries. The use of these tables must presuppose at least a general knowledge of the chemical composition of the food materials, but with a little well directed effort this can be obtained. This may seem too complicated and complex to the busy housekeeper,

and the question may arise, is it worth the effort? The common-sense answer certainly is that it is only in a general way that we can follow the dietaries, for even if a most carefully planned meal were provided it would be impossible to be sure that each member of the family ate his proper proportion. There are, however, helpful as well as practical suggestions to be gained from a careful study of the dietaries, and it is this view point that I wish to emphasize.

In planning meals, choose food so that one dish supplements another. We instinctively do this to a certain extent. Such combinations as bread and meat, meat and potatoes, toast and eggs, bread and cheese, are combinations which furnish the carbohydrates and proteids, and the fat may be and is supplied by the butter or gravy used with them. But the principle should be carried farther. The mince pie or hearty pudding should not follow a dinner with a heavy meat course, but should be served when the main dish is fish or a light meat. The fruit pie, fresh or stewed fruit or lighter dessert should follow the heartier meat. Salads made of meat with mayonnaise should be used as the main dish of the meal rather than in addition to the meat course. If salads are used at dinner, they should be of vegetables or fruits; or lettuce and celery alone may be served. Nuts should be used in place of meat, not at the close of a hearty meal.

Do not trust too much to the appetite. There is no scientific foundation for the belief that the craving of appetite for certain foods should be satisfied. That the cravings are largely the result of habit can be demonstrated by any one who will make the effort to do so. Any change of diet may cause a temporary discomfort, but soon the new habit becomes fixed, thus proving that appetites may easily become abnormal. The standard dietaries are not based on the craving of appetites, but upon the intelligent consideration of needs of the body, and frequently they are found not to accord with the appetite. One child may refuse milk or objects to meat or refuses to eat vegetables. It may be due to habits formed that are not normal. The wise mother will not overlook these irregularities, but will make a careful study of the diet of her child and will spare no effort to correct any irregularity.

Another question that is considered more and more frequently in the discussion of dietaries is, how far can vegetable foods be substituted for animal foods? Is a mixed diet essential or may we choose at will from the animal and vegetable kingdom? The animal foods are richer in the proteids and fats, while the vegetable foods furnish the carbohydrates. If the vegetables are depended upon



for the proteid supply, it necessitates the taking of a supply of carbohydrate which exceeds the demands of the body. Vegetable foods are also as a rule harder to digest than animal foods and if they are depended upon for the proteid supply, frequently a derangement of the digestive system will occur. On the other hand, vegetable foods are usually cheaper than animal foods, and with careful selection of the vegetable, choosing largely from the leguminous plants and cereals, it is possible to furnish the proteid material at a less cost than if obtained from animal foods. The answer to the query in regard to the relative value of animal and vegetable foods must therefore come from a careful consideration of individual conditions. It is interesting to note in this connection the fact that recent investigations go to prove that the actual needs of the body are met with a much smaller amount of proteid than is usually consumed. Experiments tend to show that general health and strength are equally well maintained on the lesser amount, and strong arguments are presented which indicate that perhaps the excess of proteid is a detriment rather than a help to the body.

The purity of the food must be considered in selecting it. To quote Miss Richards in her book "Food and its Adulterations," it seems to be the unanimous testimony of all chemists who have carefully investigated the extent to which adulteration of food is carried on in the United States that, while there exists adulteration injurious to health, there is a much greater injury to the morals of a community and loss to the pockets of the people. In other words, the point to which public attention should be mainly directed is the question of paying a high price for an inferior article. An adulteration has but one purpose; that is of passing off an article of a quality inferior to that which the consumer supposes it to be. Such deception should be dealt with without mercy, but fortunately for us the great bulk of the staple articles of daily diet are (with the exception of milk) of good quality. Examine any of the published lists of adulterated foods of the state chemist. The names of staple foods other than milk are rarely found. To offset the tons of flour, sugar, vegetables and fruits used, you find a short list of spices, catsups, and flavoring extracts. The moral question is far more serious. It is degrading alike to producer and consumer to make or to buy things which are not what they claim to be. A decided step in advance has, however, been taken and by national and state legislation the consumer is protected against such deception. The package must plainly state its contents, and the individual is therefore free to use it or let it alone.

A last consideration in the selection of food is its cost. Economy is entirely compatible with good living when the cook knows her business. The cheapest food is that which supplies the most nourishment for the least money. The plain, substantial, standard food materials, such as the cheaper cuts of meat and ordinary vegetables, are as digestible and nutritious as any of the more expensive articles of diet. A common error is to attempt to please by paying high prices for certain raw materials rather than by skillful cooking and dainty serving of the materials within the reach of all. The consideration of the first cost of the food is not sufficient. The amount of waste, the time and labor spent on preparation, as well as the cost of fuel, must all be considered. Baked beans or long continued stewing of a cheap piece of meat is economy if it is done with a fire in a coal or wood range which is being used for ironing. But if a fire is kept going for the purpose, the additional cost of fuel might be more than the cost of a higher-priced article of food. Frequently it is economy to buy the highest-priced articles. A flour that makes poor bread is not economical at any price. Experience alone must be the guide in expending money for food, as it is in all other considerations mentioned.

A few principles which underlie the cookery of the different classes of food:

Sugar, starch and cellulose are the carbohydrate foods. Sugar does not require the application of heat to make it soluble or digestible, but starch is in this respect very different. Without heat it is almost useless as a food for man. Raw starch is insoluble, but heat, dry or moist, will make it soluble. The starch grains swell and burst and flavors are developed. If starch is cooked in just enough moisture to swell and burst its granules, and is then kept hot (temperature above 125° F. required) a change will continue to take place. It grows more digestible and a better flavor is developed. Foods therefore that are composed largely of starch require thorough cooking. The longer the heat is applied, the more digestible they become. Vegetables that do not contain a large amount of starch when kept hot for a long time acquire a strong taste and poor color. This is due to the development of certain gases. What these gases are or just how injurious they are is not yet known; but this class of vegetables when overcooked are inferior in appearance and flavor.

The third of the carbohydrates is cellulose. Plants are made up of many cells, each consisting of a thin membranous wall inclosing a semi-fluid mass in which is found the starch grains. The cell wall is of a cellular tissue called cellulose. In young plants



it is tender, but during growth hardens and becomes indigestible. It contributes little, if any, energy, but must be considered when cookery of vegetables is under consideration. When boiled with natural, vegetable or fruit acids, it becomes loosened and softened, and is consequently made more palatable and digestible.

What there is to be said of the cookery of fats is of a negative nature, for all fats are most digestible in their natural state. Heat tends to develop in fats substances that are irritating to the linings of the digestive tract.

The effect of heat on the proteids is to coagulate them. This coagulation takes place at a temperature considerably below the boiling point. Its effect is to make the proteid insoluble. At the same time the heat develops desirable flavors, consequently the problem in the cooking of foods that contain proteids is to develop the flavor without overcooking the proteid. This principle is observed when the meats are subjected to a high temperature in the beginning, the object of which is to sear over the outside of the meat with coagulated proteid and to develop flavor. The temperature should then be lowered and cooking continued till the whole is tender. Enough has been said to prove my initial statement, viz., that the selection and preparation of food requires intelligence and in the development of the health and efficiency of the family its importance can not be overestimated.

Doctor Wiley in a recently published article says: "There is no one problem which is more important to the people of the United States than cooking. That a traveling American should be sentenced to eat the kind of foods which he finds at the railway station, the hotel or restaurant of the small town is sad enough, but, when in connection with that he remembers that these almost inedible products have been made from the best and purest of raw materials, the regret he feels is the more poignant. The principal thing is, How can this condition of affairs be remedied? In almost every community will be found households with most excellent cooking. In these cases it is not due to the cook so much as to the mistress of the household herself. Hence the first problem towards betterment is to see to it that the girls who are to become the mistresses of the households in this country are taught the art of good cooking. Such training should be a part of every girl's education. We find now, especially in country schools, the principles of agriculture as a part of the instruction, and the primers on agriculture in the hands of a live teacher produce excellent results. A beginning might be made in the public schools with a primer on cooking, in which the preparation of

outter, of bread, coffee, etc., could be illustrated in such a way as to become practically effective. The results of such work would be centers of good cooking, and from these centers the practice of good cooking would extend to the other households until the whole country would be benefitted. The higher art of cooking could then be taught in the agricultural and girls' colleges. The girl graduates would not be any less attractive or refined or finished, but they would be more valuable citizens and would make better wives and keepers of the household."

Let us all work together for the improvement of America's cookery, beginning in the public schools, continuing in the high schools, and ending in the household in the application of knowledge to actual work. Cooking will then no longer be drudgery, the servant will be a help not a boss, and the table will be a work of art, an expression of scientific knowledge. Hasten the day when such conditions will be the rule, not the exception, in the homes of America!

MARY P. VAN ZILE.

### ***The Heat Engine.***

The rays of the sun are the principal source of all energy which man employs. They cause the growth of plants, which furnish food and fuel for man. The vast coal deposits are only the result of the storing up of the sun's rays in plants in by-gone days. It is the sun which raises water from the sea level to the mountain top, thus giving it energy which is utilized to turn water-wheels, and is thus made to do useful work. On the other hand, while the sun's rays are the fundamental source of energy, they cannot be used directly by man. The secondary sources of power are the wind, waterfalls, carbon in different forms, such as coal, petroleum, or gas, and chemicals used in electrical batteries.

The largest part of the motive power used at the present time is derived directly or indirectly from the energy given out by some form of heat engine, which converts the heat of combustion of solid, liquid or gaseous fuels into work. Thus the steam, oil, gas and hot-air engines transmit their power directly by means of belts, chains, or gears, or indirectly by transforming their mechanical energy into electricity by means of a dynamo, or into compressed air through the medium of an air compressor.

Heat engines are divided into two main classes, viz., external combustion engines and internal combustion engines.

In the case of the external combustion engine, the combustion of solid, liquid or gaseous fuels takes place entirely outside of the cylinder of the engine. The heat developed by the combustion of



the fuel is then transmitted by conduction to the working substance which does the work in the cylinder of the engine. To this class belong steam-engines of all types and hot-air engines. In the case of the steam-engine, the fuel, which may be coal, petroleum, or gas, is burned in a furnace entirely outside the engine cylinder. The heat developed by the combustion of the fuel is then transmitted by conduction through the walls of the boiler shell to the water, which is changed into steam. The energy of the steam is then utilized as pressure-energy in the cylinder of the reciprocating steam-engines, or as velocity-energy in the bowl of the steam turbine, thus turning the energy of the steam into work.

In a similar manner in the case of the hot-air engine, the working substance, which is atmospheric air, receiving heat from an external furnace by conduction through the walls of the heater, expands and drives the motor piston. There is no change in the physical state of the atmospheric air, so that the heat given to it is converted into work. While the first-described type of external combustion engine, *i. e.*, the steam-engine, is the most popular and most used type of engine, the hot-air engine is but little used. This is due to the fact that air is a very bad conductor of heat and does not take up heat rapidly. Thus the hot-air engines are very bulky for a given power and, the large heating surfaces of the metal being kept very hot, soon burn out. Where the cost of fuel is not an important item they are used to some extent in small powers for pumping water, and for such work have the advantage of safety and simplicity of operation.

In the internal combustion class of engines, the combustion of the mixture of fuel and air takes place in the cylinder of the engine, or in a communicating space or vessel, without the intervention of an auxiliary boiler. The heat generated by the combustion is then turned into mechanical work. In the case of internal combustion motors, the fuel may be, theoretically, solid, liquid, or gaseous. Solid fuels cannot, however, be utilized directly in the present types of internal combustion engines on account of the incombustible matter or ash which is present in such fuels, and which destroys the rubbing surfaces in the cylinders. The solid fuels must be converted into the gaseous state by means of a gas producer before they can be utilized in engines of this class. Thus from the nature of their fuels, internal combustion engines are divided into gas, petroleum and alcohol engines.

In the case of gas engines, the heat energy produced from the gas is converted into work done on the piston.

Petroleum engines are divided into several classes, depending

on whether the crude petroleum or its distillates are used. The distillates are the condensed vapors which are evolved when crude petroleum is refined. Before any of the above liquid fuels can be utilized in an engine, it must be gasified. This is accomplished in the case of crude petroleum and kerosene engines by boiling the liquid in a chamber called a vaporizer, this vaporizer having to be heated considerably in order to completely vaporize the liquid, as the boiling point of these liquids is high. On the other hand, in the case of the petroleum distillates such as gasoline or naphtha, which vaporize at a low temperature, the vaporizer does not have to be heated and a carburetter without a heating part is utilized for gasifying such liquid fuels. A carburetter on a modern gasoline-engine is nothing more than a pulverizer, the function of which is to break up the gasoline into fine drops or sprays in order to effect an intimate mixture of the gasoline and air. The vaporizer of the kerosene engine performs the same functions as the carburetter for easily vaporized substances, *i. e.*, that of breaking up the liquid into very small particles and uniting or mixing them with air in the right proportion. In fact, some kerosene engines have vaporizers which differ from the gasoline engine carburetter only by the addition of a heater.

An alcohol engine may either use a vaporizer or a carburetter, the latter being more common. Due to the high temperature of vaporization of alcohol, either the air or the fuel must be heated in order to obtain complete vaporization. This is sometimes accomplished by drawing the air on the way to the carburetter through a chamber surrounding the exhaust pipe, but still better by allowing the mixture to pass through a heated chamber so that the residue as well as the volatile part of the alcohol vaporizes completely.

Each of the types has certain inherent advantages and disadvantages, and the selection of a type adapted to the work to be performed is a matter of critical importance. As the conditions under which engines have to work vary considerably, no definite rules can be laid down as to the adaptation of the different types. The purchaser is advised to consult an engineer who has had experience with different types, and a judicious selection will save heavy losses and disappointment.

Although many improvements have been made in the steam-engine since the time of Watt, this type of engine is still a very wasteful machine. The losses in the engine proper are due principally to the presence of moisture in the steam cylinder. This moisture, which may be carried into the cylinder with the steam or be produced by condensation on the cylinder walls and steam



passages, is reëvaporated during expansion, thus abstracting heat from the steam, very little of which is returned as useful work. Then there are losses due to friction of the engine mechanism, radiation, and conduction of heat. Again, about one-fourth to one-fifth of the heat produced by the combustion of coal is carried up the chimney. Due to all these losses, only six to ten per cent of the heat available in the fuel is turned into work in the average steam power plant. Some of the losses due to cylinder condensation and reëvaporation can be obviated by the use of dry steam, and the losses due to friction in the mechanism can be eliminated by the use of steam turbines, which work by the impulse or reaction of the steam and produce rotary motion direct, without incurring the losses due to the change from reciprocating to rotary motion. In the best modern power stations, where steam turbines are used and where part of the heat from the flue gases is regained by heating the water in economizers, the maximum efficiency obtained is about fifteen per cent. This means that eighty-five per cent of the heat in the fuel is utterly lost, as far as utility is concerned.

In the internal combustion, engines using gas, alcohol, or petroleum, no boiler is required, and thus there are no boiler losses. Then, on account of the character of the engine, the temperature range is much greater than in the steam-engine or turbine. As a result of this, the efficiency of the internal combustion engine will vary from twenty to thirty per cent. If the gas for the gas engine has to be manufactured from coal by means of producers, the efficiency of the gas-engine plant will be less than the above-stated figures, but somewhat higher than in the case of the steam plants doing the same work. On a coal basis it can be stated that the very best steam plants use about two pounds of coal for each useful horse-power, the average plant using more than five. Producer builders, on the other hand, claim they can generate a horse-power with one pound of coal. This has not been demonstrated conclusively, as the producer is of quite recent origin and has not been tested thoroughly.

From the above discussion it appears that the internal combustion engine has certain inherent advantages over the steam-engine, the advantages being due mostly to its cycle of operation. The two fundamental considerations in the construction of an engine are the cycle of operation and the mechanism. The steam-engine has an advantage over the internal combustion engine on account of its more nearly perfect mechanism. As a result of this, the reliability of the steam-engine is greater. The steam-engine

has also other advantages over the internal combustion engine, in that it is better adapted for variable loads, will stand overloads better, is less complicated, is better known, and is better adapted for some classes of work. To this may be added, that while the modern gas producers will work satisfactorily with inferior grades of fuels, yet there are no producers on the market which will work successfully in sizes less than twenty-five horse-power.

As a summary it can be stated that each of the modern heat engines has its field and, while they are all here to stay, each is adapted for certain work, this adaptability to service being more important than fuel cost. Thus the reciprocating steam-engine has its field and is successful for many uses requiring engines from ten to five hundred horse-power, also for steam-ships and locomotives. The steam turbine is best adapted for the generation of electricity, and especially of alternating current in power stations which demand heat engines of over five hundred horse-power, where the load is variable and where great overloads, as in the case of electric railway stations, are of frequent occurrence. Power stations utilizing steam turbines must have facilities for a good condensing equipment, as the superiority of this type of engine over the reciprocating engine lies principally in the utilization of high vacuums. This type of heat engine occupies very little space and is well adapted for locations where land is expensive, or where the space for additional units is limited.

In natural-gas regions, as well as in oil regions, the internal combustion engine is certainly best adapted, as the nearness to the supply makes this fuel cheaper than coal, and the advantages of this type of engines in such locations will overbalance that of any other heat engine.

For small powers, as for driving automobiles and small boats, pumping water for private houses, for farms, and for irrigation of small tracts of land, the gasoline, kerosene and crude-oil engines are best adapted. Although these types of engines utilize a fuel which is quite expensive in most localities, yet they possess many advantages over steam-engines of like powers, and thousands of these engines are sold every year for above-mentioned purposes, as well as for furnishing power in small shops, factories, creameries, and for the operation of various agricultural machinery.

A. A. POTTER.

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Professor Kinzer went to Mankato last Wednesday to buy a team of horses for the Fort Hays Branch Experiment Station, but could not find a suitable pair in that vicinity.

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### *Local Notes.*

The Animal Husbandry Department reports a natural increase of its porker family by about sixty-five sucklings.

Prof. Albert Dickens has recently planned a forestry plantation for the Industrial Institute in Topeka.

Director Ed. H. Webster has returned from the Dry-Land Farming Congress, at Cheyenne, Wyo.

Sophomore Student J. Z. Martin was one of the guests at the democratic banquet recently held at Topeka, where he made an excellent talk on "The Next Step in Politics."

Assistant Ella Weeks, of the Department of Architecture and Drawing, went to Winfield last Saturday to lecture to the Cowley county teachers on "Art Teaching in the Public Schools."

The Horticultural Department will spray its orchards by means of a small gasoline engine this spring. Professor Dickens thinks that it will prove a great saver of time and muscle and a good investment.

The junior girls of the domestic science course go to Topeka on March 8 to visit the Wolff packing-house and a number of furniture stores. They will be chaperoned by Mrs. VanZile and Misses Russell and Weeks.

Bruce Polly, a freshmen student, had his leg broken Tuesday afternoon while playing ball in the city park. He was sliding for a base and slipped into the baseman, breaking the large bone of the left leg below the knee.

The bill creating the office of state engineer and locating him at this College under the direction of the Board of Regents has been signed by the Governor and become a law. The INDUSTRIALIST will publish the act in a future number.

Heating Engineer Jacob Lund states that the College uses about 30,000 gallons of its own water per day for all purposes. The pumps are driven by an electric motor of twelve horse-power, and it requires about seventy hours of pumping per week to furnish the 200,000 gallons of water.

The senior-junior reception at the Domestic Science and Art Hall last Saturday night was a big success. It seems, however, that there was something in the refreshments served that made some of the students ill after they had left the banquet. It is thought that the meats which were shipped from Topeka for the occasion were not fresh.

We are pained to announce the death of another member of the College family. LeRoy Hawkes, a freshman, died on the night of February 27, at his boarding-house on Humboldt street, of a complication of measles and mumps. LeRoy was a bright and hard-working young man, well liked by his associates. He came here from Collier, Kan., and his body was shipped home for interment.

Manager F. W. Winter, of the students' coöperative store, reports that the sales of books and stationery during the present year have been almost double those of any previous year. The sales for January alone have been above \$6000, exclusive of the business done in the dining room.

We are sorry to report that the bill which would have given the Printing Department of the College all the College printing, and which passed the Senate recently with flying colors, carrying an appropriation of \$42,000, died in the ways and means committee of the House last Tuesday morning.

Among the many visitors at the College last week we noticed Mrs. Dow, formerly of Manhattan, but for many years a citizen of Washington state. Mr. Dow was United States revenue collector for Kansas for many years and represented Riley county in the State senate way back in the early eighties.

The appropriation bills of the College have not yet passed all of the different "readings" at Topeka, but things look favorable at this writing (Friday afternoon). Following is a statement of the items of the general appropriation bill that has passed the Senate:

|                                       | 1910.     | 1911.     |
|---------------------------------------|-----------|-----------|
| Current expenses.....                 | \$175,000 | \$200,000 |
| Land.....                             | 35,000    | .....     |
| Armory and gymnasium and equipment... | 50,000    | 50,000    |
| Athletic field.....                   | .....     | 5,000     |
| Greenhouse.....                       | 10,000    | .....     |
| Cement walks.....                     | 3,000     | 3,000     |
| Experiment station.....               | 15,000    | 15,000    |
| Farmers' and State institutes.....    | 25,000    | 27,500    |
| Engineering equipment.....            | 25,000    | .....     |
| Dairy herd and building.....          | 10,000    | .....     |
| Heat and power equipment.....         | 10,000    | 5,000     |
| Pipe covering.....                    | 5,000     | .....     |
| Repairs in tunnels.....               | 3,000     | .....     |
| Totals.....                           | \$366,000 | \$305,500 |

The Faculty had their picture taken on the campus in front of Anderson Hall last Thursday afternoon. Photographer Wolf, of Manhattan, touched the magic button. The picture will be used to embellish (?) the forthcoming year-book of the senior class.

After you have earned your wages you  
are under no obligation to your employer;  
but you are under a mighty obligation to  
yourself.      ✕      ✕      ✕      ✕



**Board of Instruction (concluded).**

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|-----------------------------------------------------------------|----------------------------------------|
| Miss Ada Rice, B. S. (K. S. A. C.)                              | Instructor in English                  |
| Miss Ella Weeks, A. B. (U. of K.)                               | Instructor in Drawing                  |
| Miss Daisy Zeininger, B. A. (Fairmount)                         | Instructor in Mathematics              |
| Leonard W. Goss, D. V. M. (Ohio State University)               | Instructor in Veterinary Science       |
| Miss Ula M. Dow, B. S. (K. S. A. C.)                            | Instructor in Domestic Science         |
| Theo. H. Scheffer, A. M. (Cornell University)                   | Instructor in Zoölogy                  |
| Herbert H. King, M. A. (Ewing College)                          | Instructor in Chemistry                |
| John B. Whelan, M. A. (Nebraska)                                | Instructor in Chemistry                |
| Louis H. Beall, A. B. (Denison)                                 | Instructor in English                  |
| Roy A. Seaton, B. S. (K. S. A. C.)                              | Instructor in Mechanical Engineering   |
| William L. House                                                | Foreman of Carpenter Shop              |
| Louis Wabnitz                                                   | Foreman of Machine Shops               |
| Miss Ina E. Holroyd, B. S. (K. S. A. C.)                        | Assistant in Preparatory Department    |
| Ambrose E. Ridenour, B. S. (K. S. A. C.)                        | Foreman of Foundry                     |
| Miss Emma J. Short                                              | Assistant in Preparatory Department    |
| Miss Ina Cowles, B. S. (K. S. A. C.)                            | Assistant in Domestic Art              |
| Miss Kate Tinkey                                                | Assistant Librarian                    |
| Earl N. Rodell, B. S. (K. S. A. C.)                             | Assistant in Printing                  |
| M. Francis Ahearn, B. S. (Mass. Ag. College)                    | Assistant in Horticulture              |
| Miss Gertrude Stump, B. S. (K. S. A. C.)                        | Assistant in Domestic Art              |
| M. Sheldon Brandt, Ph. B. (Yale)                                | Assistant in Architecture and Drawing  |
| Chas. Yost                                                      | Assistant in Heat and Power Department |
| Earle B. Milliard                                               | Foreman of Blacksmithing               |
| J. T. Parker                                                    | Assistant in Woodwork                  |
| J. D. Magee, A. M. (Chicago)                                    | Assistant in Mathematics               |
| E. G. Meinzer, A. B. (Beloit)                                   | Assistant in German                    |
| Miss Florence S. Latimer, B. M. (Ferry Hall Seminary)           | Assistant in Music                     |
| Miss Marjorie Russell (Mechanics' Institute)                    | Assistant in Domestic Science          |
| Burton Rogers, D. V. M. (Iowa State College)                    | Assistant in Veterinary Science        |
| Miss Clara Willis (Framingham Normal)                           | Assistant in Domestic Science          |
| C. O. Swanson, M. Agr. (Minn.)                                  | Assistant Chemist, Experiment Station  |
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The Dramatic Instinct.

A drama, in the truest sense of the term, is a representation of life presented upon the stage by means of action and conversation. In a fully developed state the drama is one of the most highly involved forms of literature; in an undeveloped state the materials out of which it is made are so natural and so universal as to pass almost unobserved. A child in its attempts to represent the objects about it in life designates the train as the "toot-toot" and the cow as the "moo cow." On the playground it requires only a growl and a tention of the fingers to transform the most harmless child into a savage bear and its playmates into legitimate prey.

We become more critical as we grow older and it takes a more perfect representation to arouse our imaginations. In some, perhaps, the imitative instinct disappears and the narrative or descriptive instinct takes its place, while in others it remains alive and active. In many grown persons, especially those of a vivacious temperament, the tendency to impersonate is so strong that they cannot tell an incident without partially acting it out. In narrating what someone said not only the emphasis of the words is unconsciously reproduced, but often the sound of the voice as well. Deaf-mutes, compelled by necessity to depend upon other resources, find imitation a valuable substitute for their missing senses and develop it to an astonishing degree. There is a common saying that the Frenchman does half his talking with his shoulders, whereas the orator without gestures would be a curious anomaly. We smile indulgently at the child's names for things and overlook the fact that we ourselves use words formed in imitation of the sound. Were such words blotted out of the language, we could no longer describe the *whizzing* of a bullet, the *ticking* of a clock, or the *rattle* of the hail. The blow would fall still more heavily upon our literary men. Poe would have to give up,

" . . . the *tintinnabulation* that so musically wells
From the bells, bells, bells, bells,"

and Cooper's Indians would have to forego their aboriginal custom of saying "*ugh!*" "*ugh!*"

These scattered instances of the natural desire to express our experiences vividly are the outgrowth of a widespread latent dramatic instinct in the human race, ready to spring up and flourish in response to the stimuli of favorable conditions.

Since the drama represents life by means of action and conversation, we would naturally expect that it might arise in a crude and primitive form out of either of these elements. Such we find to be the case. On the one side of the drama lies pantomime, in which the story is developed by action alone; on the other side lies what we may call enlivened narration, or narration giving the conversation of the characters who bear a part in the happenings. In the drama proper both of these elements are present, though in varying proportions. The harmonious blending of action and dialogue in such a way as to produce a definite, unified picture of life comes as a gradual outgrowth of repeated experiments in actual presentation and is characteristic of mature dramatic art.

Brander Matthews gives an account of a play found among the bushmen of Australia in which a large band of actors is divided into two groups; one representing the native inhabitants, the other, with painted faces, representing the white invaders. They rush to meet each other upon the stage and a desperate battle ensues in which the natives finally kill all the white men. It is said that the spectators go wild with enthusiasm and that it is difficult to keep the actors from wounding each other, so great is their excitement.

Here we have exemplified the crude Darwinian ancestor of the *problem* play as found in Ibsen and Pinero. Gradually add to this action the rude cries of battle; change these into more extended speeches by the leading heroes; then broaden the inciting motives to include ambition, love, revenge, or any other of the great elemental emotions; finally enlarge the choice of subjects to include other phases of life—and we have the fully developed drama of civilized life, definite in its plan, adequate in its technique, self-conscious in its purpose.

In the early Greek plays and in the early English plays we have examples of rudimentary dramas originating in the conversational element, which is itself a development of the simpler recitative.

Among the Greeks it was customary at the feasts held in honor of Bacchus to sing hymns in honor of the god. These usually related some well-known legend concerning the god's adventures and were sung by a chorus. To make these songs more vivid the chorus naturally fell into feigning themselves his band of satyrs. Perhaps they added to the effect by dressing themselves in goat-

skins. To imagine the leader of the chorus the god himself or his messenger made the story more vivid still. It therefore became the office of the leader to impersonate the god as well as to recite his deeds, and the chorus gave their comments showing the feelings which these adventures awakened. This is the underlying principle of Greek drama. Thus, unconscious of its own real nature and blindly groping its way, the Greek drama gained step by step a firm foothold in the world.

As a part of the Dionysian festival a goat was sacrificed to the god. This was a solemn religious ceremony, and the song which accompanied it was dignified and stately. It is from this ceremony that we get the word *tragedy*, which means the "goat song." The entire celebration was not so solemn, however, and the Greek vivacity found expression in local jests and clever satire. Songs which freely introduced humor were called *comedy*, *i. e.*, the "village-song." As time went on the differences between these two types of dramatic compositions became more clearly marked and the scope of each was greatly enlarged.

The next step in the development of the Greek drama was the addition of an actor who recited between the choral songs or entered into dialogue with the leader of the chorus. Aeschylus, full of the daring of genius, introduced a second actor. The effect was revolutionary. The dialogue was by this means made independent of the chorus which henceforth sank to secondary importance. The two actors could act out a complete story, and the function of the chorus was to voice the sentiments which the events would naturally arouse in a thoughtful spectator. Sophocles and Euripides further increased the number of actors and handled their materials in a more realistic way, but the character of Greek tragedy remained essentially the same as Aeschylus had established it.

The religious character of tragedies was retained to the end and the chorus sang their parts to an accompaniment so, that a Greek drama must have resembled an oratorio or a Wagnerian dramatic opera more closely than it resembled a modern tragedy. In reading a Greek tragedy, therefore, we must remember that we are judging it under conditions for which it was not intended. It is as if someone who had never attended an opera should try to form an idea of one by reading the libretto. In spite of the stiffness of a Greek tragedy it must have been a very impressive spectacle. It was never able to throw off its burden of long declamatory speeches and cumbersome choruses, but staggering forward under this vast load we see the bowed form of a real giant.

The English drama, although of native origin and growth, has a

history very similar in some respects to that of the Greek drama. Both originated in religious ceremonies. The English drama, like the church drama of the continent, grew out of the chants used in the churches. At Easter and at Christmas time the chants were very elaborate and of course emphasized the significance of these festivals. They were given sometimes by the whole choir together and sometimes by two divisions who chanted alternately. By a slight variation one division of the choir was made to ask a question and the other to give a response to it. In this way by chanted conversation a story was unfolded based on the Biblical narrative.

The desire to make these stories more real had already led to the erection of painted images representing characters and scenes from the Bible story. Images of the Virgin and Child were as popular in that day as in this. To bring home the reality of Christ's life to an uneducated people the monks arranged the images in as life-like a manner as possible. A real manger was placed beside the images and a live ox and an ass were eating their food from it. There were no pews as in modern churches and rude stages could easily be erected and arranged with simple settings.

The next step taken was to substitute living persons for the images. The monks took these parts and at first were stiff, silent figures, but by degrees they were given a part to chant or to recite and action was introduced. At Easter time the scene represented the Passion and the Resurrection of Christ, and the characters who took part besides Christ himself were usually the three Marys, Peter, John, and the Roman soldiers guarding the tomb. The value of such presentations was realized at once and soon other Biblical subjects as well as legends of the saints were handled in the same way.

Such plays were called "Miracle plays," because they so often dealt with the miraculous. They are also sometimes called "Mystery plays," although in the strictest sense the "Mysteries" include only those plays dealing with the mysteries of the Redemption of the world through the Nativity, Passion and Resurrection of Christ in fulfillment of Old Testament prophecies.

One of the earliest of these plays was "The Slaughter of the Innocents," and pictured Herod on his throne. The part of the "innocents" was taken by the choir boys, who must have seemed very large for their age if they were supposed to be under two years old. It was an uncritical age, however, and the monks played the parts of the three Marys without questioning its

appropriateness. The fall of man was represented in the play: "The Story of the Creacion of Eve with the Expelling of Adam and Eve out of Paradyce." The characters in the play are Pater, Adam, Eve (after her creation), and Serpens. The Abraham and Isaac play taught the lesson of absolute faith. The sorrow of the aged father for the loss of his beloved child makes a tragic and pathetic scene. As the angel stays his hand and commands him to sacrifice a ram near by, Abraham in a transport of joy thanks God for His "great grace" and exclaims:

"A-rysse up, Ysaace, my dere sunne, a-rysse;
A-rysse, up, swete chyld and cum to me."

More important than any of these in illustrating the growth of the drama was the play on the subject of Noah's Flood. It represents Noah's conversation with God, and his preparations for sheltering his family and for preserving specimens of the living creatures upon the earth. Noah and his family construct a ship. The stage directions state that "the Arcke must be boarded round about and on the bordes all the beastes and foules painted." At last the work is finished and Noah's satisfaction seems complete. Like his ancestor Adam before him, and like many an other well-meaning husband since his day, Noah finds, however, that his care and forethought isn't appreciated. Mrs. Noah is dissatisfied with the ark, declares that she can't tell which part of it is the front and which is the back, and is so far from believing there is going to be a flood that she determines to quit the ark altogether. As she sits down at her spinning upon a rock she advises that no man try to hinder her "ffor drede of a knock." Finding gentler means of no avail, Noah is at last compelled to chastise his amiable helpmeet and drive her into the ark by main force.

The humor of such situations held the interest of the audience and heightened the effect of the serious parts by contrast and by the rest it gave the spectators. It may seem a far cry from such a beginning as this to such comedies as those of Shakespeare, but the genealogical descent is established without a break.

The taste and purpose of the writer determined how prominent a part the comic element should form. Certain characters came more and more to be looked upon as comic characters and to be treated in a traditional way. To belittle the devil, he was often made an object of amusement rather than of terror. He usually went armed with a lath sword and was a great coward when placed in a really dangerous position. In one play a boy slashes him with a sword and pares away a considerable portion of his

claws, to Satan's no small discomfiture. Herod shared a like fate with Satan. He was always made out to be a great boaster, a man of ample proportions, and went about in a costume of bright red and green colors. When angered his rage was so robustious that a reminiscence of it has crystallized into the phrase "to out-Herod Herod."

About this time a reaction set in against these plays. The monks felt that they had been secularized too much to be appropriate for presentation in the church. They were therefore driven out into the churchyard, where they were given on a rude stage set up in a corner or recess of the wall. Later they were given on movable stages hauled about to different parts of the city, and finally they were presented in the town-halls. They became secularized more rapidly after leaving the church and had a greater influence than ever.

The tendency of treating characters like Herod and Satan in a traditional way was to make them come more and more to represent a fixed type. Herod was a typical boaster and represented the quality *boastfulness*. In like manner the Prodigal Son was a typical wasteful person. His carelessness regarding the future was so great that he stood for *prodigality* itself. Other characters representing types rather than distinct individuals were created by a similar process of thought. The genius of the mediæval mind for personification and allegory found a congenial field in the drama. The Prodigal Son had friends who helped him spend his portion, and what could be more appropriate than to bring them upon the stage and picture the life they were leading in a tavern scene? One of his boon companions as we learn from the scriptures was Drunkenness, and another was Wanton. Waiting to join him farther along the pathway of life was doubtless the pale and meagre form of Want, or perhaps this strange and as yet unfamiliar companion was standing at his elbow giving him a solemn warning, which he heeded not.

Plays which had for their characters the personified virtues and vices were called "Morality plays." Their primary purpose was to teach a moral lesson, but to do this well they needed to give realistic pictures of every-day life. From this stage onward the English drama developed very rapidly. Freed from the trammeling influence of religious subjects, it had a field as broad as the world and as deep and varied as life itself. The effect was like freeing the chrysalis from its shell. For more than four centuries the drama had been following its uncertain path, now doubling upon its course and now losing itself in the blind mazes of untrod-

den ways; before another century it had climbed to its loftiest summit and was descending into the vale beyond.

A number of influences coöperated to bring about the final maturity of the Elizabethan drama. Space will permit only a brief statement of these. The interlude, intended as its name indicates for presentation between the parts of a more serious play, grew into a short comedy or farce, and helped to bring about the segregation of comedy from the other elements contained in the *miracles* and *moralities*. The segregation of the serious element on the other hand produced tragedy. There was a grimness about most of the morality plays. While the thoughtless man was enjoying his little day of pleasure amidst scenes of mirth and low-humor, Death was preparing to claim his own, and Hell-mouth was waiting at the back of the stage to swallow up the moral offender. Behind the great dragon jaws as they opened could be seen lurid tongues of hungry flames with sooty figures of demons stirring the fires. The catastrophe was not the work of blind fate, but grew out of the person's own character acting upon events in a certain environment and under certain conditions. This is the essence of tragedy. Otherwise the closing act would represent only so much spilling of blood and would sink to the level of any grewsome accident. Tragedy represents the penalty of violated law, not the operations of chance.

Already the study of real life had brought about greater individuality of characterization. This tendency was further stimulated by the study of foreign models which followed in the wake of the Renaissance. From 1550 onward, comedies and tragedies based on classical and Italian models exerted a strong influence upon both the subject matter and the technique of the native drama. In addition to the rich stores of classical stories and allusions suddenly poured into circulation, explorations and foreign travel had quickened the imagination and supplied it with tales of strange and romantic adventure. If we remember at the same time that there were no newspapers nor periodicals, and no rapid multiplication of books as at the present time, but that the drama largely supplied the place of these, we will go far toward accounting for the remarkable dramatic activity of the period.

We must remember also that Elizabeth's reign was an age of youthful and buoyant national life, that the vigorous national and intellectual life of the realm centered in London, and that the theater was its mouth-piece. Is it to be wondered at that men ambitious for literary fame should be drawn to the drama? There was not a poet of the first rank in London toward the close

of Elizabeth's reign who did not apply himself to dramatic composition. Shakespeare's immediate predecessors adapted poetry to the purposes of the stage and gave it a pliancy and an expressiveness only a little short of perfection. They had given the drama fairly definite form. It remained for Shakespeare to complete what they had begun; to give the characters and situations such a naturalness that the spectator forgets it is an illusion, and to attain to that finish of structure and elegance of expression which satisfies the mind in the presence of perfect art.

Whatever changes the drama may have undergone since Shakespeare's time have been due to a shifting of emphasis. Since a play must be acted in about three hours, the dramatist must exercise rigid economy of space. There is a great temptation to specialize upon some one element to the neglect of the others. The problem play and the drama of psychological analysis are examples of this tendency. It cannot be denied that such dramas produce a powerful effect, but it is to be doubted whether they are the highest form of art. In selecting and condensing his material the dramatist should so proportion everything that the whole play may be on the proper scale. To be sure, things have to be represented in miniature, but the miniature should suggest the complexity of human life. Herein lies the superiority of the Shakespearean drama. For many-sided interest, for symmetrical development, for truthfulness and naturalness, for poetic beauty of thought and expression, for intensity of creative power, and for a general effect of noble uplift, the world has not produced its equal.

A good drama well acted is so adequate to its purpose and so inherently harmonious that it appears to be one of the easiest and simplest of arts. The appearance, however, is far from being the reality. As compared with the other types of literature the drama is exceedingly difficult and is one of the last to develop. Ballad, epic, narrative, and lyric poetry, all precede it in order of development. The evolution of the drama from latent elements in our nature was late in beginning, and it had far to travel. From the inborn desire of the human mind to body forth its creations, spontaneous variations arose in existing forms of expression. The more useful variations were preserved and accumulated in the course of time into a body of stage traditions. To perfect the instrument of expression, or to meet the needs of changing conditions of society at each successive period of development, a throng of nameless workers were exercising their ingenuity in creating and testing new variations. No experiment was worthless, no discovery was lost. Every unknown author who displayed ever

so little originality helped to make possible an Aeschylus or a Shakespeare, a Calderon or a Moliere.

Just as among plants and animals many low forms of life have kept alive without modification while others went on developing, so in the realm of the drama many forms are still to be found which belong to a former age. Pantomime and other primitive forms of the drama still exist in the rural districts of many countries and create an active interest. Some forms like the Christmas celebrations became connected with religious ceremonies and have thus been enabled to survive. Others were kept alive by finding a refuge in some out-of-the-way spot, as, for example, "The Passion Play" among the simple peasants of Oberammergau.

The development of the dramatic instinct and the diversity of forms under which it appears is representative of the development of the other arts as well. Everywhere there is the same struggling upward, the same mingling of forms in varying stages of growth. Music has its minstrel shows as well as its grand operas; the little wooden church on the corner makes some pretensions, although no one would mistake it for a Greek temple nor a gothic cathedral; and the little girl delights in her doll which closes its eyes, despite the fact that its measurements and contours would hardly accord with an artist's ideal of anatomy. In widely scattered countries and in widely separated ages the mind of man shows wonderful self-consistency. In response to similar influences similar aspiration awaken to run the gamut of growth, maturity, and decay. The hopeful sign in all this panoramic whirl of shifting circumstance is the universal evidence of capacity for development.

BENJ. R. WARD.

American History Note-book.

Prof. Ralph R. Price, of the Department of History and Civics of this College, has published a second, revised edition of his "Topics and References for the Class in American History at the State Agricultural College." The booklet is a very neat and concise auxiliary to the text-book, Channing's Students' History of the United States, which is designated throughout the references as the "text," but it may be used with almost any other text-book. There are three outline maps of the United States that may be used for grouping historic movements, and a Finding List giving authors and names of works of reference. The printing of the note-book was done by the Printing Department of the College.

Local Notes.

Winter term will close Friday, March 26. Spring term will begin Tuesday, March 30.

The meetings held by "Dad" Elliott at the Y. M. C. A. gymnasium this week were well attended.

President Nichols attended the quarterly meeting of the State Board of Education last Wednesday and Thursday.

Assistant Eastman, of the Horticultural Department, was at the hospital several days receiving treatment for nervous disorder.

Of the twenty varieties of wheat imported from Russia by Director Burkett, of the Experiment Station, two years ago, several have proven almost entire failures.

The recent cross-country run has stirred up the fleet-footed athletes. They are practicing every evening and are making good records. The three-mile run was made in 19 minutes by two of the runners.

The lecture in the Auditorium on Friday, March 5, given by Prof. J. E. Kammeyer for the benefit of the Y. M. and Y. W. C. A. of the College, was well attended. There were about six hundred tickets sold, netting the associations a snug little sum.

Some one has discovered that there will be a total eclipse of the sun on next Commencement day, June 17. We have not had time to look up the pranks of the old luminary, but predict that with a class of a hundred and twenty shining graduates there will be plenty of light on the campus.

Governor Stubbs has appointed three new Regents for the Agricultural College, to take the place of Judge A. M. Story, of this city, Geo. P. Griffith, of Hays City, and Capt. J. S. McDowell, of Smith Center. The newly appointed Regents are: Arthur Capper, editor of *The Topeka Capital*; ex-Senator Harris, of Lawrence; and W. J. Todd, of Maple Hill. All three are well known public men of high standing, and their appointment is entirely satisfactory. Mr. Capper is the organizer and head of the largest publishing house in the West. The Daily Capital Company is publishing not only the leading daily of the State, but also *The Farmers' Mail and Breeze*, *The Missouri Valley Farmer*, *The Nebraska Farm Journal*, *The Topeka Sunday Capital*, *The Topeka Weekly Capital*, *The Household*, and *Poultry Culture*. He is a man of a practical turn of mind, but broad in every way. Mr. Harris has been a State senator from his county and has represented Kansas in the United States senate. Two years ago he was the democratic candidate for the governor's office and ran way ahead of his ticket. He is a farmer and stock-raiser—one of the pioneer short-horn breeders and importers of the West. Mr. Todd is known all over the State as a model farmer and stock man, the owner of one of the finest farms in Central Kansas, a man of sound views and practical things. The great technical school will be safe in the care of these Regents.

The Whitney Brothers' Quartet has been secured to give a return concert at the College, Wednesday, March 17. We predict another full house for them.

The legislature has adjourned. The total amount appropriated by the session just closed is \$7,002,789.30. This is about \$100,000 less than the appropriations by the 1907 session. It includes \$83,000 earned by the penitentiary twine plant and turned back into the fund, but it does not include the \$200,000 appropriated from the fund allowed by Congress for a G. A. R. memorial building in Topeka. A total of \$2,477,725.87 was given to the State educational institutions and \$150,000 for private charities. The educational institutions fared reasonably well at the hands of the legislature. The Agricultural College received \$671,500. This is exclusive of \$12,666.67 to restore endowment. The University was given \$982,269, and the State Normal received \$24,000. An itemized statement of the appropriations received by the College was published in the last INDUSTRIALIST. On the whole the legislature treated us well, though it refused to give us more than one building and to give us permission and funds to do our own printing. A synopsis of the different laws that affect the College will be published in the INDUSTRIALIST.

The baseball program for the Kansas State Agricultural College team as announced Monday by Manager Cortelyou comprises twenty-one games. Of this number fifteen will be played in Athletic Park and the remaining six in various parts of Nebraska, Iowa, and Kansas:

GAMES AT HOME.

Topeka White Sox.....	March 26
Washburn College.....	March 30
Nebraska Wesleyan.....	April 1
Kansas University.....	April 9
Kansas University.....	April 10
Southwestern University.....	April 13
Nebraska University.....	April 15
Bethany College.....	April 23
Oklahoma N. W. Normal.....	April 28
Fairmount College.....	May 4
William Jewell.....	May 6
Highland Park.....	May 12
Haskell Indians ..	May 17
Oklahoma University.....	May 18
K. S. A. C. Alumni.....	June 16

GAMES ABROAD.

Highland Park, at Des Moines.....	April 19
Iowa State College, at Ames.....	April 20
Nebraska University, at Lincoln.....	April 21
Washburn College, at Topeka.....	May 27
State Normal, at Baker University.....	May 28
Kansas University, at Lawrence.....	May 29

During the first part of June games will probably be played with the Manhattan league team. This season's schedule will see a K. S. A. C. baseball team cross the boundaries of the State for the first time. If Nebraska would have allowed Missouri to change a date, K. S. A. C. could have played Missouri at Manhattan this spring.

Professor Kammeyer was called last Monday to the bedside of his parents, who were ill at their home in Kansas City. He reports them feeble but slightly improved.

The short-course students, both farmers' and domestic science, held a farewell reception Saturday evening at the Women's Gymnasium. The farmers' short course closes this week, while the domestic science course ends with this term. About 250 students were enrolled in the two courses this winter and their teachers report good work in all the classes. It would be difficult to find a group of young men and young women in any part of the world who would look healthier, stronger, braver and more earnest than these 250 young Kansans who now go back to their farms to apply what they have seen and learned at Manhattan.

Alumni and Former Students.

C. A. Kimball, '93, has been appointed a member of the State text-book commission by Governor Stubbs.

Some time ago an effort was made to secure the adoption of the first Friday evening in March as the date for the reunions of the branch alumni associations. This has not been carried out fully, but reunions were held by the associations at Topeka and Kansas City on the 5th instant, and it is reported that the Chicago alumni also observed the date.

H. V. Harlan, '04, has been chosen to fill a position in the Bureau of Plant Industry of the United States Department of Agriculture and will begin his work April 1. He will be located at St. Anthony Park, Minn., and will be occupied with certain phases of the problem of breeding barley of greater value than that of the present.

From copies of the Sioux City, Iowa, *Journal* we learn that the wedding of Orville Blaine Whipple, '04, and Miss Myrtle Lothian occurred February 3, at the home of the bride's parents. The papers also chronicled a number of social events given in honor of the bride and the fact that the happy couple visited Washington, New York, Boston, and other eastern cities while on their wedding trip. The friends of the groom will be interested in learning that Mrs. Whipple is a graduate of Morning Side College, and later a student of music in Chicago. For two years she has been a teacher of music in Grand Junction, Colo., where Mr. Whipple is in charge of the Branch Station of the Colorado Agricultural College.

Changes of address: V. L. Cory, '04, 801 Euclid street, McPherson, Kan.; Mrs. Inez (Palmer) Barrows, '96, R. F. D. No. 5, Washington, Kan.; L. A. Doane, '04, 130 East 16th street, Junction City, Kan.; E. C. Gardner, '04, 4364 Emerald street, Chicago, Ill.; R. A. Fulton, '05, 1334 East 124th street, Cleveland, O.; W. G. Shelley, '07, U. S. Experiment Station, Akron, Colo.; S. R. Tilbury, '07, Grand Canyon, Ariz.; John W. Calvin, '06, State College, Pa.; Ralph Hull, '08, Shady Bend, Kan.; Edna Biddison, '08, White

Cloud, Kan.; H. A. Spuhler, '06, 2530 Cleveland, Kansas City, Mo.; C. E. Davis, '06, 37 Arthur street, Schenectady, N. Y.; Mrs. Kate (Paddock) Hess, '00, 2016 Prospect, Kansas City, Mo.; H. T. Neilsen, Abilene, Kan.

At the reunion of the Topeka alumni Pres. E. R. Nichols was the guest of honor, but H. W. Avery, '91, Wakefield, Kan., C. M. Breese, '87, Manhattan, Kan., and Marcia E. Turner, '06, Manhattan, Kan., were other guests from out of the city. Fifty-seven were present, according to the report in the *Capital*. The banquet was held at the National Hotel. Toasts were given by R. W. Rader, '95, the retiring president of the association, Mabel C. Cornell, a former student, Ex-Secretary I. D. Graham, H. W. Avery, '91, Caroline Morton, '06, and President Nichols. Other exercises also enlivened the occasion, which was a very successful reunion. The new officers elected are: President, H. W. Jones, '88; vice-president, L. W. Hayes, '96; secretary, Wilma (Cross) Rhodes, '04.

The annual reunion of the Kansas City alumni and former students was held in the rooms of the Y. W. C. A., Kansas City, Kan., and was attended by fifty or sixty. After an hour or more of social greeting all participated in an ample banquet, where each sought his affinities. Following this the company withdrew to the parlors, where speeches were required of some of the guests. The first on the program was Regent Edwin Taylor, who read a carefully prepared statement of some of his views concerning the Agricultural College and the need of a "line fence" between the College and the University. Capt. E. A. Helmick, junior student in 1883, a graduate of West Point who has given valuable service in the army for twenty years and who is now attending the school for officers at Fort Leavenworth, was a notable guest and contributed an interesting speech in which he showed the constructive civilizing work of the United States Army wherever it has been employed. Lizzie (Clarke) Helmick, sophomore student in 1883, was also present and found a few old friends. J. T. Willard, '83, and Albert Dickens, '93, were among the invited guests, and each made an informal talk in response to President Kinsley's call. The new officers are: President, Frank Yeoman, '98; vice-president, Anna (Smith) Kinsley, '01; secretary-treasurer, Richard Bourne, '03. The company dispersed at a late hour, many of them leaving together for Kansas City, Mo. On the way W. H. Phipps, '95, and Frank Yeoman, '98, formulated a plan for the entertainment of Messrs. Dickens and Willard the next day. As a result they were entertained for luncheon at the beautiful home of Mr. and Mrs. Yeoman, after which Mr. Phipps, with his courteous nephew, Mr. Bair, took the party on a forty-mile ride through the unrivaled boulevards of the city. The pleasure of the day will be long remembered by the guests thus favored. Friday night Mr. Dickens was the guest of C. V. Holsinger, '95, and Olive (Wilson) Holsinger, '95, and Mr. Willard was similarly entertained by Dr. A. T. Kinsley, '99, and Anna (Smith) Kinsley, '01. On Sunday Mr. Dickens and a number of other alumni were entertained at dinner by Dora (Thompson) Winter, '95.

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(Board of Instruction concluded on last page.)

# THE INDUSTRIALIST

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## *The Field of a State Engineer.*

Since general interest in the question of a State engineer has been aroused, it may be profitable to consider briefly the service which such an officer could render the State in return for the expenditure necessary to properly support the office.

Most people think of a State engineer only as a highway engineer. This is in part correct, since the major portion of a State engineer's time should, undoubtedly, be devoted to the good-roads question, including bridge and culvert construction. Just now, while there is considerable agitation for improved roads, a great deal of time could be very profitably spent on the economics of road (not necessarily stone road) construction in the State of Kansas, in order to obtain the data necessary to intelligently advise communities in different parts of the State regarding the proper and most economical method of improving their highways.

In the present state of our knowledge it is impossible to state, even approximately, what it costs the average Kansas farmer, per mile of haul, to market his crop. Any one can readily understand that unless an engineer knows how much it costs a community to market its produce on an existing highway it will be impossible for him to calculate the saving to the community which can be effected by any contemplated improvement. The farmers themselves probably know more about the actual cost of marketing their crops than anybody else. Most of them, however, have given very little thought to the subject, and the opinion of any one individual could hardly be accepted with confidence. A fair average value of this cost could, however, be obtained by taking the average estimate of a large number of the representative men in a community. It would, of course, vary in different communities.

In addition to the actual cash value of an improved road, it is worth something to a community as a luxury. Concerning this element, also, the residents of a community are probably better qualified than any one else to place a value on it.

The problem of determining the actual value of improved roads in the different sections of the State, varying as widely as they do



in industrial and climatic conditions, is one to which a State engineer could profitably devote months, or even years, of time. As intimated above, this information must be gathered largely from the residents, and the work of obtaining it would be slow and laborious. Once the information is obtained, a long step in advance will have been taken in the economics of highway improvement.

No up-to-date railroad manager will authorize improvements on his system until he is convinced that the expenditure will prove a paying investment. The same policy should govern expenditures on highway improvements.

The study of local conditions and materials, with a view to determining the methods best adapted to secure the greatest improvement for the money expended, might also be profitably taken up by a State engineer. The great activity of the past few years in the field of highway engineering has witnessed the invention of dozens of new methods and applications for improving roads. Most of these methods have considerable merit when favored by local conditions. The selection of the proper method for any community will bear considerable study.

In the matter of bridge and culvert construction, all will agree that, at the present prices of labor and materials, the perishable timber structure has about passed its usefulness.

A set of standard plans for concrete and stone culverts and bridges of short span to be distributed to the county commissioners, would be of great value. In several states this has already been done. For the construction of large bridges, there can be no doubt that the services of a competent engineer, not connected with a bridge company, are well worth the cost. Services of this character can be obtained more cheaply through a State engineer than by the employment of consulting engineers for each case as it arises.

In the construction of permanent bridges, the area of waterway allowed is of much greater importance than in temporary structures. This, too, is a complicated question, involving not only local conditions but dependent upon the general character of the whole drainage area of the stream bridged. A State engineer would be in a position to study to good advantage the characteristics of the water-sheds of the streams of the State. The knowledge thus gained would be valuable in determining the required area of waterway for bridges.

Data acquired in this connection would also be of great value when it comes to a consideration of the improvement of streams for the development of water power, navigation, and the preven-

tion of overflow. Improvements of the streams along one or all of these lines will certainly be among the problems of the near future.

Closely related to the above are drainage projects. These should be subject to some sort of official oversight. Unless this is the case, a drainage district may impose serious loss upon territory lying lower down the valley, by discharging the water from the drained territory too suddenly upon the country lower down having unimproved channels, thus making overflows more frequent.

A State engineer could also render a considerable service to the people of the State by coöperating with other State and Government engineers and giving to the people of Kansas the results of experience in road improvements, bridge building, drainage, irrigation, etc., gained in other states, and by the Government experts who are working along these lines.

With such a broad field open to him, not by any means limited by the few suggestions noted above, it would seem that a State engineer should find no difficulty in earning for the State a fair return on the expenditure necessary to maintain the office.

L. E. CONRAD.

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### ***Some Things Germany Can Teach Us.***

An American traveling in Europe finds much to criticise and is bound to return to the United States more convinced than ever that America is the best country in the world. Very much might be said or written about the superiority of this great republic over all European countries. However, it is undoubtedly more profitable for us to observe in what respects America can learn from Europe. In science, music, art, and the drama, Germany especially occupies a foremost place, but it is my purpose to call attention to several other departments of human activity less frequently mentioned, in which America can go to school to Germany and other European states. The most noteworthy of these are the forestry policy, the maintenance of good roads, and of good transportation facilities.

Among the sights that most attract the tourist's notice as he gazes from the car window of a German train are the numerous tracts of planted trees, standing in rows on a plain naturally treeless. Especially noticeable is this on the great sandy levels of northern Germany. Young trees just planted, trees of several years' growth, and large trees, are all to be seen in numerous and well-cared-for tracts of forest. The hilly, rugged parts of central



and southern Germany, the Harz, the Thuringian Forest, the Black Forest, etc., are all kept in timber. The impression the traveler gets is that there must be a systematic policy of forest preservation and planting carried out to bring about such favorable forest conditions.

According to the New International Encyclopedia, "more than 25 per cent of the total area of Germany, viz., about 35,000,000 acres, is under forests, the preservation and cultivation of which receives almost as much attention as agriculture, and is scientifically conducted. The larger woods and forests in many of the states belong to the government and are under the care of special boards of management, which exercise the right of supervision and control over all forest lands, whether public or private. More than a third of all of the forests belong to the various state governments; about one-sixth is in the hands of communes; 2.3 per cent belongs to associations, and the remainder (about 46 per cent) to private individuals." The foresting of barren, sandy plains has been especially worthy of note. Government schools are maintained for the education of skilled foresters, and the annual production is now increasing rather than decreasing.

The country roads of Germany and other parts of Europe are the delight of the American tourist. United States Consul-General Mason reports the following: "Every important road is a graded, macadamized turnpike, with culverts of massive stone, ditches on either side (which are paved whenever there is danger of washing), and generally lined with trees. All slopes and counterscarps are secured by grass." The fact that Germany is an older country and more densely settled relieves it of the serious road problem which confronts us in this country. Probably the most splendid highway in the world is the Axenstrasse, extending along the eastern side of Lake Lucerne, in Switzerland, from Brunnen to Fluelen. It is mainly hewn out of solid rock with several tunnels, and commands a charming view of William Tell's historic lake. The expense of construction must have been enormous.

The German railways are owned and operated by the government. Each state has its own system. On account of the density of population, trains are run frequently, and any city can be reached by a direct line. The cars are usually divided into compartments, seating from six to ten persons, and there are four classes of accommodations, differing as to furnishings and price. Special compartments are provided for "smokers," "non-smokers," and "ladies." Ladies, however, regularly travel in the smoker and non-smoker coupes as well as in those exclusively set apart for them

Some excellent features of the German railway system are punctuality, low fares, safety, and sufficient seating capacity. One can travel for months on German trains and never find one of them late. They pull into the station exactly on time with a precision that seems almost uncanny to an American who is accustomed to hear the reply, "Two hours late." The inconvenience and loss caused by the lateness of trains would be hard to estimate. It is one of the most vexatious features of railway travel. Nothing of this sort exists in Germany, where the trains are practically always on time. The great majority of German travelers pay less per mile than do American passengers. The fare, third class (which is the class in which three-fourths of the people travel), is not over one and one-third cents per mile. The number of accidents on German railroads is much less than in the United States. It would be hard to get fair statistics covering this point because of the differing conditions, but no one questions that this statement is most fully supported by the facts. All country crossings are guarded by watchmen and gates. No one is permitted to walk on the tracks or in the yards. A collision between stations would be practically impossible because of the care taken in this respect. The bridges and road-beds are built with great care and thoroughly inspected. Young, underpaid, heedless boys are not given positions of responsibility, where they can place the lives of the passengers in jeopardy. Likewise there are no stations where trains pass without night operators, and the employes are not obliged to work so many hours that their senses are dulled and their bodies exhausted. There is no sacrifice of safety for either economy or speed. The German railway officials never allow a passenger to stand in the aisle. If there is no room in the class for which he has a ticket, he is seated in a higher class compartment. The civility of German officials also deserves mention.

Americans interested in the progress of their country may well ponder on these points in which Germany is superior to the United States—the preserving and planting of forests, the excellence of the country roads, and the punctuality, cheap fare, safety and good accommodations of the railways.

EDGAR G. MEINZER.

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Plans are being made for remodeling the dairy barn to accommodate sixty cows. New floors and stanchions are to be put in, new silos are to be constructed, and other necessary changes in and outside of the stable will be made, such as will make them suitable for carrying on practical dairy work.



***Program for Winter Term, 1909, Showing Instructors, Subjects, and Number in Class.***

| INSTRUCTOR.             | FIRST HOUR.                                  | SECOND HOUR.                        | THIRD HOUR.                               | FOURTH HOUR.             | FIFTH HOUR.                             | SIXTH HOUR.                           | SEVENTH HOUR.                       | EIGHTH HOUR. |
|-------------------------|----------------------------------------------|-------------------------------------|-------------------------------------------|--------------------------|-----------------------------------------|---------------------------------------|-------------------------------------|--------------|
| Walters.                | Arch. Comp. . . . . 3                        | Arch. Draw . . . . 4                | Desc. Geom. . . . . 26                    | Trusses . . . . . 5      | Architectural Composition . . . . . 24  | Color and Design. . . . . 37          | Perspective . . . . . M. a. m. 35   | M. a. m. 32  |
| Weeks.                  | Color & Design. . . . . 4                    | Geom. Drawing . . . . . 4           | Home Decoration . . . . . 4               | M. a. m. 48              | Geometrical Drawing . . . . . W + F 34  | Projection Drawing . . . . . T + T 36 | Home Decoration . . . . . M p m. 32 |              |
| Brandt.                 | Geom. Drawing . . . . . 4                    | T + T 11, W + F 18                  | Freehand Drawing . . . . . T + T 34       | T + T 37                 | Object Drawing . . . . . W + F 41       | Freehand Drawing . . . . . T + T 54   |                                     |              |
| Putnam.                 | Object Drawing . . . . . T + T 34            | Freehand Drawing . . . . . W + F 41 | Animal Nutri. . . . . 47                  | T + T 45, W + F 39       |                                         |                                       |                                     |              |
| Willard <sup>1</sup> .  | Animal Nutri. . . . . 47                     |                                     |                                           |                          |                                         |                                       |                                     |              |
| Swanson <sup>1</sup> .  |                                              |                                     |                                           |                          |                                         |                                       |                                     |              |
| King.                   |                                              |                                     |                                           |                          |                                         |                                       |                                     |              |
| Whelan.                 | Chem. I & II. . . . . 40                     | Chem. I & II. . . . . 55            | Chem. I & II. . . . . 41                  | Chem. I & II. . . . . 41 | Ag. Chemistry Lab. . . . . 13           |                                       |                                     |              |
| Crowley.                | Chem. I & III Lab . . . . . 51               | Adv. Inor. Chem. . . . . 4          | Chem. I. . . . . 37                       | Chem. I. . . . . 23      | Chem. I & II. 27   Chem. I & II. 36     |                                       |                                     |              |
| Newman.                 | Chemistry I. . . . . 57                      | T + T 27, W + F 31                  | Chemistry I Lab. . . . . 37               | T + T 29                 | Chem. I & III Lab T + T 65, W + F 59    |                                       |                                     |              |
|                         |                                              |                                     | Chem. I & III Lab . . . . . 12            | T + T 31, W + F 48       | Chem. I Lab. . . . . T + T 33, W + F 43 |                                       |                                     |              |
| Remick.                 | Anal. Geom. . . . . 18                       | Int. Calc. . . . . 17               | Int. Calc. . . . . 12                     | Algebra IV. . . . . 40   |                                         |                                       |                                     |              |
| Andrews.                | Algebra IV. . . . . 33                       |                                     | Anal. Geom. . . . . 21                    | Geom. I. . . . . 24      |                                         |                                       |                                     |              |
| Zeiningner.             |                                              |                                     | Geom. I. . . . . 28                       | Geom. I. . . . . 24      |                                         |                                       |                                     |              |
| Magee.                  | Trigonometry 42                              |                                     | Geom. II. . . . . 28                      |                          |                                         |                                       |                                     |              |
| McGarrah.               | Algebra I. . . . . 25                        | Algebra II. . . . . 19              | Algebra I. . . . . 35                     | Geom. II. . . . . 36     | Algebra II. . . . . 26                  | Trigonometry 37                       |                                     |              |
| Porter.                 | Diff. Calc. . . . . 35                       | Geom. II. . . . . 28                | Algebra III. . . . . 46                   | Trigonometry 33          | Geom. I. . . . . 35                     | Algebra II. . . . . 21                |                                     |              |
| Petty.                  | Algebra III. . . . . 45                      | Geom. I. . . . . 27                 | Algebra II. . . . . 34                    | Algebra I. . . . . 27    | Geom. II. . . . . 11                    | Algebra III. . . . . 26               |                                     |              |
| Eyer.                   | D. C. Mach. . . . . 13                       | D. C. Mach. . . . . 9               | Physics Lab . . . . . 49                  |                          | Bookkpg. . . . . 24                     |                                       |                                     |              |
| Lane.                   | Phys. S. C. . . . . 30                       |                                     |                                           |                          |                                         |                                       |                                     |              |
| Robert's <sup>1</sup> . |                                              |                                     |                                           |                          |                                         |                                       |                                     |              |
| Freeman <sup>1</sup> .  |                                              |                                     |                                           |                          |                                         |                                       |                                     |              |
| Stevens.                | Seed Testing . . . . . 18                    | Plant Phys. . . . . 18              | Plant Morph. . . . . 20                   | Th 10, S 24              | D. C. Mach. Lab. T + T 11, W + S 11     |                                       |                                     |              |
| Smith.                  |                                              | Botany I. . . . . 47                | Botany I. . . . . 57                      |                          | D. C. Mach. Lab. T + T 11, W + S 11     | S. C. Botany. 26                      |                                     |              |
| Monroe.                 |                                              |                                     |                                           |                          |                                         |                                       |                                     |              |
| McKeever.               |                                              | Phil. of Ed. . . . . 15             | Concrete. . . . . 7                       | Psychology . . . . . 33  | Botany I. . . . . 36                    |                                       |                                     |              |
| McCormick.              |                                              |                                     |                                           |                          | Plant Phys. Lab. W + S 19               |                                       | Plant Anatomy Lab. . . . . Th. 4    |              |
|                         |                                              |                                     |                                           |                          | El. Psychol. I. 56                      |                                       | Psychology . . . . . 18             |              |
| Potter.                 | Applied Mech. I. . . . . 12                  | Thermo Dynam. I. . . . . 11         |                                           | Steam Engr. . . . . 11   |                                         |                                       |                                     |              |
|                         |                                              |                                     |                                           |                          |                                         |                                       |                                     |              |
| Seaton.                 | Mach Drawing I. . . . . T + T 14             | T + T 14                            | Applied Mech. I. . . . . 21               |                          |                                         |                                       |                                     |              |
| House.                  | Woodwork I. . . . . T + T 33, II W + F 44    | W + F 44                            | Woodwork I. . . . . W + F 43, II T + T 33 |                          |                                         |                                       |                                     |              |
|                         | Woodwork S. C. . . . . M. a. m. 38, p. m. 35 |                                     |                                           |                          |                                         |                                       |                                     |              |
| Wabnitz.                | Machine Shop M. . . . . 12                   |                                     |                                           |                          |                                         |                                       |                                     |              |
| Conrad.                 | Applied Mech. . . . . 12                     |                                     |                                           |                          |                                         |                                       |                                     |              |
| Dickens <sup>1</sup> .  |                                              |                                     |                                           |                          |                                         |                                       |                                     |              |
| Eastman <sup>1</sup> .  | Horticulture. . . . . 24                     | Fruit Grow. . . . . 9               | Astronomy . . . . . 17                    | Applied Mech. . . . . 8  |                                         |                                       |                                     |              |
| Ahearn <sup>1</sup> .   | Floriculture. . . . . 24                     | Horticulture 28                     | Horticulture S. C. 39                     | Forestry . . . . . 1     |                                         |                                       |                                     |              |
| Cunningham.             | Floriculture S. C. . . . . 38                | Horticulture S. C. 34               | Horticulture. . . . . 24                  | Floriculture. . . . . 24 |                                         |                                       |                                     |              |
| Brink.                  | Eng. Lit. I. . . . . 20                      |                                     |                                           |                          |                                         |                                       |                                     |              |
| Ward.                   | Adv. Gram. . . . . 18                        | Rhetoric II. . . . . 41             | Eng. Lit. II. . . . . 31                  | Eng. Lit. . . . . 44     |                                         |                                       |                                     |              |
| Beall.                  | Adv. Comp. . . . . 38                        | Classics. . . . . 38                | Rhetoric II. . . . . 43                   | Adv. Comp. . . . . 29    |                                         |                                       |                                     |              |
| Leonard.                | Classics. . . . . 41                         | Composition 28                      | Rhetoric I. . . . . 44                    | Rhetoric II. . . . . 24  |                                         |                                       |                                     |              |
| Knight.                 |                                              | Adv. Gram. 24                       | Readings. . . . . 39                      | Composition . . . . . 33 |                                         |                                       |                                     |              |
| Turley.                 | Readings . . . . . 33                        | Readings 42                         | Adv. Comp. . . . . 31                     | Classics. . . . . 41     |                                         |                                       |                                     |              |
| ten Eyck <sup>1</sup> . |                                              | Crop Prod. . . . . 38               | Crop Prod. . . . . 42                     | Agriculture . . . . . 45 |                                         |                                       |                                     |              |
| Ball.                   | Soil Physics. . . . . 48                     | Soil Physics. . . . . 4             | Crop Prod. . . . . 31                     | Crop Prod. . . . . 31    |                                         |                                       |                                     |              |
| Schafer.                | Crop Prod. .                                 |                                     |                                           |                          |                                         |                                       |                                     |              |

|                |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
|----------------|---------------------------|--------|---------------------------|--------|---------------------------|-------|-----------------|--------|---------------------------|------------------------|-----------------|----|--------------------|----------------|
| Brown          | Violin                    | 18     | Theory of M.              | 8      | Violin                    | 14    | Violin          | 9      | Violin                    | 24                     | Violin          | 16 | Orchestra          | 7:30 a. m. 36  |
| Latimer        | Piano                     | 11     | Piano                     | 13     | Piano                     | 12    | Piano           | 15     | Piano                     | 12                     | Piano           | 13 |                    |                |
| Cave           | Piano                     | 15     | Piano                     | 10     | Piano                     | 15    | Piano           | 16     | Piano                     | 12                     | Piano           | 12 |                    |                |
| Rudolph        | Piano                     | 10     | Piano                     | 17     | Piano                     | 16    | Piano           | 9      | Piano                     | 12                     | Piano           | 15 |                    |                |
| Schoenleber    | Band Inst.                | 11     | Band Inst.                | 17     | Band Inst.                | 13    | Band Inst.      | 9      | Band Inst.                | 18                     | Band Inst.      | 7  | Band               | 36             |
| Stouder        | Surgery I.                | 11     | Obstetrics                | 10     | Dis. of Dairy Ani.        | 11    | Med. I.         | 11     | Surgery                   | 13                     | Clinic          | 11 |                    |                |
| Goss           | Hist. II.                 | 13-16  | Patho. II.                | 10     | Histology II Lab.         |       |                 | T+T 16 | Histology II Lab.         | T+T 13, W+F 10         |                 |    |                    |                |
| Rogers         | Anat. II.                 | 18     | Comp. Phys.               | 19     | Histology II Lab.         |       |                 |        | Dis. Farm Ani.            | 42                     |                 |    |                    |                |
| Hays           | Breeds of Stock           | 44     | Breeds of Stock           | 38     | Breeds of Stock           | 43    | Breeds of Stock | 20     | Stock Judging             | T+T 41, W+F 41         |                 |    | Stock Judging      | T+T 43, W+F 43 |
| Kinzer         | Feeds & Feeding           | 35     | Feeds & Feeding           | 34     | Feeds & Feeding           | 33    | Feeds & Feeding | 32     | Bact. II Lab.             | W+F 22, Spec. 8        |                 |    |                    |                |
| Wheeler        | Bact. II Lab.             |        | M. a. m. 22               |        | Bact. II                  | 22-22 | Bact. II        | 17     | Bact. Lab.                | T+T 10                 |                 |    |                    |                |
| King           | Ent. Lab.                 | 1      | Ent. Lab.                 | 1      | Ent. Lab.                 | 6     | Ent. Lab.       | 8      | Entomology Lab.           | T+T 34, W+F 32         |                 |    |                    |                |
| Bushnell       | Entomology                | 40     | Entomology                | 34     | Animal Parasites          | 10    | Entomology      | 34     | Entomology II Lab.        | T+T 15, W+F 14         |                 |    |                    |                |
| Headlee        | Geology                   | 17     | Zoology I.                | 57     | Geology                   | 32    | Zoöl. Lab.      | 48     | Zoology II Lab.           |                        |                 |    |                    |                |
| Dean           | Entomology                | 26     | Entomology                | 26     |                           |       | Zoology II.     | 26     |                           |                        |                 |    |                    |                |
| Scheffer       | Dairy Mgt.                | 10     | Dairy Mgt.                | 10     | Market Milk               | 7     |                 |        |                           |                        |                 |    | Drill              | 509            |
| Parker         | Dairying                  | 12     | Dairying                  | 12     | Poultry Hshd. II          | 7     |                 |        |                           |                        |                 |    |                    |                |
| Boice          | Cheese Mkg.               | 6      | Cheese Mkg.               | 6      | Poultry Hshd. S. C.       | 7     |                 |        |                           |                        |                 |    |                    |                |
| Kendall        | El. Physics Lab.          | 6      | El. Physics Lab.          | 6      | Cheese Mkg.               | 6     |                 |        | Cheese Mkg.               | 3                      | Cheese Mkg.     | 3  |                    |                |
| Brintnall      | Physics IV                | 16     | Physics IV                | 8      | Physics IV                | 33    | Physics IV      | 24     | El. Physics               | 50                     | Physics II Lab. |    |                    |                |
| Philips        | Home Mgt.                 | 26     | D. S. Elect.              | 43     | Physics I                 | 32    | Physics IV      | 24     | Physics IV Lab.           | Tu. II, W+F 28, Th. 26 |                 |    |                    |                |
| Logan          | Domestic Science I Lab.   | 18     | Domestic Science I Lab.   | 18     | Short Course Dinners      |       | Home Mgt.       | 20     | Cooking S. C.             |                        |                 |    |                    |                |
| Hamilton       | Therapeutic Cookery       | 12     | Therapeutic Cookery       | 12     | Dom. Sci. I.              | 22    | Dom. Sci. I.    | 18     | Domestic Science I. Lab.  |                        |                 |    |                    |                |
| Logan          | Domestic Science I. 18    | 16     | Physiology                | 16     | Home Nursing              | 28    |                 |        | Therapeutic Cookery       | 11                     |                 |    | Home Nurs.         | 23             |
| Van Zile       | Bread & Brd. Mkg.         | 4      | Short Course Dinners      | 13     | Domestic Science I Lab.   |       |                 |        | Physiology                | 19                     |                 |    | Physiology         | 19             |
| Dow            | Advanced Cookery          | 2      | Job Lock-up T+T. 2        | 3      | Cooking I.                |       |                 |        | Short Course Dinners      |                        |                 |    |                    |                |
| Russell        | Dist. 2                   | 2      | Job Lock-up T+T. 2        | 3      | Punctuation               | 7     | Industrial      | 18-16  | Cooking I.                | 10-12                  |                 |    |                    |                |
| Willis         | Composition 2 II.         | 3      | Adv. Comp. and Dist.      | 3      | Composition III           |       | T+T+S 1         | 1      | Composition I.            | 6                      |                 |    | Printing for Drill | 13             |
| Woodward       | Adv. Comp. and Dist.      | 3      |                           | 3      | Cutt. Stock               | W+F 1 | Make-up & Imp.  | 2      | Job Presswork I.          | W+F 2                  |                 |    |                    |                |
| Johnston       | Sewing III                | T+T 13 | Sewing III                | T+T 13 | Physical Training         | 20    |                 |        | Physical Training         | 49                     |                 |    |                    |                |
| Lindsey        | Sewing II                 | T+T 13 | Sewing II                 | T+T 13 | Dress Making Short Course | 12    |                 |        | Dress Making              |                        |                 |    |                    |                |
| Rickman-Rodell | Sewing I                  | 16-12  | Sewing I                  | 16-12  | Dress Making Short Course | 13    |                 |        | Dress Making Short Course | 12                     |                 |    |                    |                |
| Barbour        | Dress Making Short Course | 14     | Dress Making Short Course | 14     | Sewing II                 |       | W+F 19          |        | Dress Making              | 12                     |                 |    |                    |                |
| Becker         | Dress Making Short Course | 12     | Dress Making Short Course | 12     | Sewing III                |       | W+F 11          |        | Sewing IV                 | 15                     |                 |    |                    |                |
| Cowles         | Bookkpg                   | 28     | Bookkpg                   | 31     | Sewing II                 |       | W+F 20          |        | Sewing I.                 | 17                     |                 |    |                    |                |
| Stump          | Geometry I.               | 34     | Algebra II.               | 26     | Bookkpg                   | 38    |                 |        | Algebra III.              | 20                     | Algebra I.      | 20 |                    |                |
| Hancock        | Med. Hist.                | 33     | Anc. Hist.                | 30     | Anc. Hist.                | 27    | Med. Hist.      | 33     | Anc. Hist.                | 23                     | Med. Hist.      | 29 |                    |                |
| Barnett        | Med. Hist.                | 33     | Anc. Hist.                | 30     | U. S. Hist. A. 20         |       | Anc. Hist.      | 40     | U. S. Hist. A. 12         | 17                     | Anc. Hist.      | 17 |                    |                |
| Holroyd        | Med. Hist.                | 24     | Med. Hist.                | 14     | U. S. Hist. B. 37         |       | Physiology      | 18     | Med. Hist.                | 21                     | Mod. Hist.      | 4  |                    |                |
| Short          | Pub. Spkg. I.             | 28     | Pub. Spkg. I.             | 28     | El. Physics Lab           |       | M. 25           |        | Algebra I.                | 21                     | Pub. Spkg. I.   | 9  |                    |                |
| Reynolds       | El. Physics Lab           |        | El. Physics Lab           |        | El. Physics Lab           |       |                 |        | Pub. Spkg. I. 27          | Th 12                  |                 |    |                    |                |
| Gordon         | Arithmetic A              | 35     | Grammar A                 | 38     | Adv. Gram.                | 23    |                 |        | El. Physics Lab           | S 26                   |                 |    | Spelling           | 10             |
| Mack           | Algebra II.               | 34     | Algebra II.               | 19-19  | Algebra II                | 24    |                 |        |                           |                        |                 |    |                    |                |
| Bisby          | El. Cooking               |        | Geometry II.              | 29     |                           |       |                 |        |                           |                        |                 |    |                    |                |
| McCheyne       | Sewing II                 | 20     |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| Enfield        |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| McCray         |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| Dresser        |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| McKeeman       |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| Juste          |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| Talley         |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| Akin           |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| Hazen          |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| G. Wenkheimer  |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| A. Wenkheimer  |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| Parrish        |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |
| Justin         |                           |        |                           |        |                           |       |                 |        |                           |                        |                 |    |                    |                |

<sup>1</sup>Experiment Station work. <sup>2</sup>Except Saturdays.



### ***Barley in the Oats?***

To many any legal provision concerning the sale of grains in the whole state seems altogether unnecessary. The purchaser is assumed to be able to see what he is getting and to govern himself accordingly. Many have supposed that the Kansas Feeding-stuffs Law in its application to mixed feeds refers only to ground feed. No distinction is made, however, the law plainly including all feeding-stuffs which "have been subjected to any mixing process" and no exception is made in favor of whole grains. It is true that a purchaser is much better able to judge of the quality of a mixture of whole grains than he is of one of ground feeds. Nevertheless, where there is much difference in the market value of the grains mixed there could be great differences in value between two mixtures very much alike in appearance.

The journals devoted to the interests of the feed trade are prone to say hard things concerning feeding-stuffs laws, and it is a surprise to find Rienzi, in the *American Hay, Flour and Feed Journal*, devoting a somewhat lengthy article to the problem of the adulteration of oats by barley. At length he says: "What the end of this slick adulteration of oats with barley will result in is now being vigorously discussed by the grain receivers everywhere. It may end in a general pure-feed amendment enacted, to be added to the pure-food legislation, which will provide for oats, either in bulk or in sacks, to be tagged or branded with the ingredient grain products, if not perfectly straight and pure." Here, then, is a recognition of a thing that the Kansas lawmakers have already seen and provided for. Rienzi, in his article concerning this adulteration, states that it is systematically conducted and is possible because of the general resemblance between unhulled barley and oats, so that considerable barley can be mixed with oats without attracting attention. He further discusses the inferiority of barley as a feed when compared with oats, and dwells upon the fact that the purchaser is getting less feeding value for his money than he should, while the adulterator is substituting a cheaper article for the more valuable one.

Any such mixtures of barley and oats to be legally sold in the State of Kansas must be registered with the Director of the Experiment Station and carry a tag stating the name and address of the manufacturer, net weight of the package, the nature of the contents, and a guaranty as to the percentage of fat and of protein.

An adulteration still more difficult of control, even when detected, is the mixing of rye with wheat. It has been said that many dealers buy considerable rye but never sell any. Close in-

spection of their wheat shipments, however, will disclose the missing rye, in the form of an adulteration which nets the dealer a neat profit but impairs the milling quality of the grains for flour production. As rye is likely to be a natural impurity of wheat, grown as it is from impure seed and on contaminated lands kept in wheat year after year, this species of adulteration is a difficult one to meet. Millers have from time to time threatened to cut the price of wheat containing rye. This will probably have to be done before farmers and dealers will take the necessary pains to keep the wheat pure.

J. T. WILLARD.

### *Poultry Institutes.*

The two hundred thirty-five farmers' institutes in Kansas constitute a powerful organization for the improvement of agriculture. There are practically twenty thousand farmers and their wives connected with these institutes. At the various meetings this year the subject of poultry has always been discussed with interest. The old hen has been paying a lot of bills in Kansas and thoughtful farmers are beginning to give consideration to the best ways of handling this class of "live stock."

Therefore, the Farmers' Institute Department of the Kansas Agricultural College has suggested that all institutes meet on Saturday, April 3, 2:00 to 4:00 P. M., to discuss this subject. The following topics are suggested: (1) Mating the breeding stock for the improvement of the flock. (2) Care of the breeding stock. (3) Hatching. (4) Brooding the chicks. (5) Feeding the young stock. (6) Kind, "broilers," "layers," "capons."

It is hoped that each institute president will call a meeting of his institute for that day and select "leaders" for the discussion. County presidents are requested to arrange for special meetings at villages where no local institute has been organized and to appoint a chairman for the day, usually a county vice-president. Let every Kansas farmer and his wife attend a poultry meeting on April 3. The subject for May will be wheat.

J. H. MILLER.

**M**ONEY cannot buy a good name, or a clean heart,  
or a happy home, or a peaceful death, or self-respect,  
or the favor of God, or a safe eternity, or any other of the best things of even this sordid, secular, gold-cursed world. ✕ Money is the strongest and the WEAKEST thing in the world. ✕ ✕



*Local Notes.*

The College interclass stunt will be held April 5.

Two hundred fifty students were enrolled in blacksmithing the present winter term.

The Department of Agronomy is receiving a large number of applications for seeds of all kinds.

The students of Nemaha county have lately formed a Nemaha County Club, with a membership of fifteen.

The Music Department will give its annual concert in the College Auditorium during the first week in May.

Principal E. C. Farrar, '07, of the Centralia high school, writes that he is organizing a grand school excursion to the College.

The blue-grass on the campus is showing the effect of the recent warm weather. A few more days will find it in its spring suit.

The permanent name given to the College annuals which will be published by the senior classes after this will be "Royal Purple."

Asst. A. G. Philips, of the Poultry Department, is the happy stepfather of half a thousand young chicks. He expects to raise about 4000 of the cackling youngsters this spring.

The commissioners of Clay county have set apart ten acres of their county farm for the purpose of raising pure-bred corn under the supervision of the Agronomy Department of the Kansas State Agricultural College.

The new Mechanical Engineering Hall is not making any progress this spring. The contractors, the Blanchard Construction Company, of Topeka, have closed their office and have left the city and nobody seems to know "what next."

College Josephine DeKol, No. 77032, owned and raised by the Dairy Department of the College, has just completed a seven-days record for advanced registry, and produced over a pound more butter fat than the amount required for cows in her class.

The Dairy Department has just received a very attractive gold medal, awarded by the National Dairy Show, on market milk exhibited at Chicago the first of last December. One face of the medal consists of a milk bottle enclosed in a wreath. On the other side of the medal is stated the donor of the medal, to whom and for what the medal was awarded, and also the score on the milk.

The Domestic Science and Art Departments will hold their annual exhibition of student work on the first and second floors of the new Domestic Science and Art Hall, Wednesday, March 24. The work of the classes in home decoration and designing will be exhibited on the second floor. Visitors will be welcome to see these interesting displays of student work. The exhibitions will be open from 10 A. M. to 5 P. M.

There is a lot of interest being manifested all over the State in silos and their use. It looks as if this class of buildings was becoming better known and their value as a factor in economical milk products more fully realized.

The third period of the thirty-day feeding test which the Dairy Department has been conducting will end the first week in April, and we will have some valuable information along the lines of economical milk production and the profitable feeding of dairy cows.

There are many cases of measles in the city and several students have had a siege of them. There have also been a few cases of scarlet fever, but we know of no cases at present. Several mild cases of small-pox were reported lately, but the disease is well in hand and is not likely to spread. When a city grows like Manhattan the troubles and trials of city life must grow also. A student can usually prevent contact with sick people and thus protect himself from diseases of the contagious kind.

A fact that is not generally known is that the Kansas State Agricultural College was the first party that succeeded in hatching chicks by electricity on a commercial scale. The experiment was successfully performed over two years ago by Asst. Allen G. Philips, of the Poultry Department. Neither the College nor Mr. Philips thought of patenting the process, but several months later a firm in Buffalo, N. Y., took out a first patent on an electrical incubator covering the experiment of the Kansas College. The process will hardly become a practical one, since heat produced by coal oil is much cheaper than electricity.

The baseball schedule published in last week's INDUSTRIALIST has been changed in four particulars. The Oklahoma University game has been cancelled. The Washburn game at Manhattan has become uncertain on account of the poor financial condition of that team. The dates for K. U. and Haskell have been changed to May 24 and 25, respectively. Instead of but one game with Haskell in Manhattan there will probably be two. St. Marys will play one or two games here during the first part of June. Cotner University, of Nebraska, has written for a game, and if a suitable date is found K. S. A. C. will play that college.

Carl Mills, a short-course student, died at the Park View hospital last Wednesday morning. Carl's home was in Cedarvale, Kan., and he has only been attending College here since January. Some four or five weeks ago he took sick with the measles, but recovered nicely from that attack. A couple of weeks later he took sick with pneumonia, and it was this that caused his death. His father had been with him for the last week and his mother arrived Tuesday evening. He was a bright young man who had made a great many friends while here, and all extend their heartfelt sympathy to the bereaved parents. The body was taken to Cedarvale Wednesday night on the Rock Island. His classmates and many students from other classes accompanied the body to the depot.



The Fort Hays Branch Experiment Station has had some bad luck lately with the hog cholera. Several animals died of the disease before the herd could be vaccinated. Student Robert Wilson, of the senior class in the veterinary science course, went out there last Tuesday to assist the station folks in doctoring the herd. Fortunately, the station had sold its fat hogs before the disease spread among the younger animals.

The Library has lately received of Prof. Philip Fox, '97, instructor in astrophysics in the University of Chicago, a number of seperata from the *Astro Physical Journal*, of last year, containing accounts of his original researches made in the Yerkes Observatory at Williams Bay, Wis. The pamphlets, eight in number, treat chiefly the distribution of eruptive prominences on the solar disk and observations of the rotation and physical conditions of that orb. The local editor frankly confesses that he is not astronomer enough to review the presented matter properly. He judges, however, from the general aspect of the seperata, that Professor Fox (who used to be assistant in the Department of Architecture and Drawing at this College) is now in his element and hard at work.

Governor Stubbs has named R. Eadie, of Syracuse; J. Starr, of Scott City, and Frank M. Lockard, of Goodland, as the land commissioners of the State of Kansas to select the 7682 acres of school lands for the State Agricultural College which were added to the endowment by the last Congress. When in 1862 the Government gave 90,000 acres of land to the State for the purpose of founding a college of agriculture and the mechanic arts the Interior Department would not certify more than 82,313.52 acres, because a part of the land laid within the twenty-mile strip set aside for the Union Pacific railroad and was counted double. The College always held that it was entitled to the full amount, and brought the matter to the attention of Congress at different times. The bill had all sorts of ill luck, but last winter it finally passed both houses and received the signature of President Roosevelt.

At the meeting of the State Entomological Commission held at Topeka Saturday of last week to consider a plan for carrying out the instructions of the legislature to exterminate the San José scale, for which the sum of \$9000 was appropriated, it was decided that it was too late now to buy and receive machinery with which to spray the fruit trees and thus protect them from the ravages of this dreaded scale this year. In order to be effective the trees must be sprayed before the buds burst in the spring and the leaves come out. The commission will at once take steps to survey the fruit-tree districts and locate the trees infected and burn them. Next winter, after the leaves have fallen from the trees, the commission will begin the work of spraying them, and thus hopes to in a large measure exterminate the scale and its ravages on the trees. There was quite a fight on this San José scale bill in the last legislature, and the appropriation was cut from \$30,000 for three years to \$9000.

### ***Alumni and Former Students.***

Harold T. Nielsen, '03, has gotten tired of being away from home, even for the pleasure of traveling over all parts of the country, and has resigned his position in the United States Department of Agriculture to enter actual farming as a business on a large establishment near Abilene, Kan.

J. M. Westgate, '97, agronomist in the Bureau of Plant Industry, is one of the authors of Circular No. 24 of that Bureau, which is a very valuable publication on "Alfalfa in Cultivated Rows for Seed Production in Semiarid Regions." This method is highly recommended for trial, experiments thus far conducted indicating that the growing of alfalfa in cultivated rows for the purpose of seed production offers every promise of success in the semiarid regions, particularly where the rainfall is so light as to produce but one or at most two crops of hay per season.

We are in receipt of a copy of the *Cablenews-American* published at Manila, P. I. It contains a paper read by Col. James G. Harbord, '86, of the Philippine Constabulary on "The Relation of the Philippine Scouts to the Insular Government." This paper was presented at a dinner given by half a hundred captains and lieutenants of the Philippine Scouts at the Army and Navy Club, January 16. Colonel Harbord's paper is a very interesting one and contributes materially, especially to those of us at this distance, to a clarification of ideas concerning affairs in the Philippines.

A quiet wedding occurred yesterday afternoon at 4 o'clock at the home of Mr. and Mrs. J. A. Robertson, 930 Osage street, when their daughter, Miss Kate Robertson, and Mr. Wayne White, of Burlington, were united in marriage by Rev. D. H. Fisher, of the Presbyterian church. Only immediate relatives were present, among whom were the groom's mother, Mrs. White, of Burlington, Kan., Dr. and Mrs. T. M. Robertson, of Coffeyville, Mr. and Mrs. I. A. Robertson, of Alma. A luncheon was served after the ceremony. Mr. and Mrs. White are both graduates of the '05 class of the K. S. A. C., and have a host of friends who offer congratulations. Mr. and Mrs. White left yesterday afternoon for Burlington.—*Nationalist*, March 18.

Miss Doris Train ['06], who has been teaching the 9-B grade in the city schools, has resigned, her resignation taking effect last week. Miss Clara Schild ['08], who teaches the 8-B, will take her place, and Miss Nellie Mitchell, the substitute teacher, will take charge of the 8-B. Miss Train went to Topeka Saturday to complete preparations to become the bride of Bruce Stewart, of Plattsburg, Ohio, a former student of the K. S. A. C. The wedding will take place in a few days, either in Kansas City or St. Louis, final arrangements having not yet been made. The loss of Miss Train in the city schools will be keenly felt, as she was among the most efficient teachers. The wedding at this time comes as a surprise to her many friends, who regret that she is to leave their midst so soon.—*Republic*.



*Board of Instruction (concluded).*

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Historical Society

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(Board of Instruction concluded on last page.)

THE INDUSTRIALIST

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MANHATTAN, KAN., APRIL 3, 1909.

No. 22

Makers of the Kansas State Agricultural College.

The following biographical sketches of Ex-Pres. Geo. T. Fairchild and a number of his collaborators are excerpted from a History of the Kansas State Agricultural College, written by Dr. J. D. Walters and being printed in the Printing Department. The biographies of Regent Hessin and Professors Lantz, Olin, Kellerman, *et al.*, are omitted in this reprint because of a lack of space:

PRES. GEO. T. FAIRCHILD.

President George Thompson Fairchild, A.M., D.D., was born in Brownhelm, Lorain county, Ohio, October 6, 1838. His father was a farmer and teacher. There were four sons and four daughters, of whom George T. was the youngest. He was educated at Oberlin College, graduated in the classical course in 1862, and in the department of theology in 1865, and, though never a pastor, was ordained to the ministry of the Congregational church. In the same year he was elected instructor in the Michigan Agricultural College, and the next year was made professor of English literature, which chair he filled until his call to the presidency of the Kansas State Agricultural College, where he entered upon his work December 1, 1879. During a year's absence of the president of the Michigan college, Professor Fairchild had been acting president by choice of the board of regents. President Fairchild was a prominent member of the National Educational Association, and has contributed several valuable papers to the published proceedings of that body. At the session at Saratoga, N. Y., in 1885, he was made a member of the National Council of Education and appointed to the committee of technological education. At the meeting in Chicago, in 1877, he was made president of the industrial section, and in the following year, at San Francisco, he was reelected to the same position. In 1886 the Faculty of the Kansas State Agricultural College, in order to show him their appreciation of his work, and to give him a fitting token of their esteem, presented him with a life director-

ship in the National Educational Association. In the American Association of Agricultural Colleges he twice held the office of vice-president. One of his brothers, James H. Fairchild, was for many years president of Oberlin College, and another brother, E. H. Fairchild, president of Berea College, Kentucky.

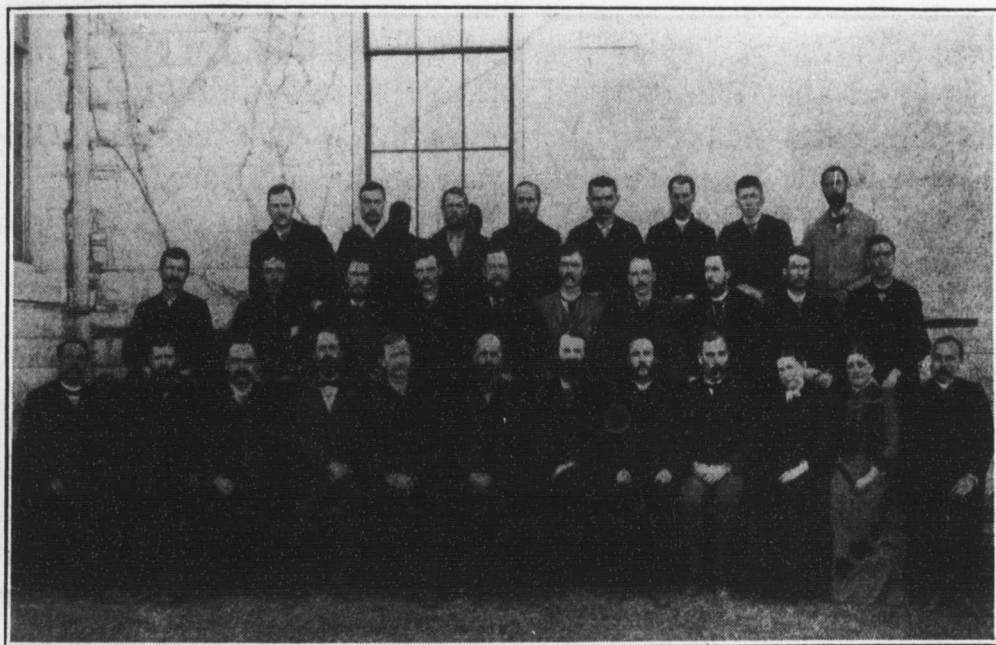
President Fairchild's views with regard to the "new education" were not as radical as those of Anderson had been. With President Anderson, the Agricultural College had been largely a station for pedagogical experiments, conducted with a view of producing proofs of his theories on the value of manual training. With President Fairchild, the College became a model school for the education of young men and women who were to go back to the farm or workshop, not only to perform manual labor, but to live complete lives and to develop and honor their calling. In an article on "Our Agricultural Colleges," written for the *Chicago Farmers' Review*, and subsequently published by the Michigan State Board of Agriculture in their annual report, President Fairchild, then professor at the Michigan State Agricultural College, presented his ideal in such a characteristic manner that there could be no doubt in the minds of those who called him to Kansas as to his aims and methods.

President Fairchild lost his position in the political melee that followed the victory of the Populist party in 1896. Once before, in 1893 and 1894, the Board of Regents had been composed of Populists, but the aged educator, by his dignified demeanor and through the efforts of his personal friends (Regent Ed. Secrest and others) in the victorious camp, succeeded in maintaining his moorings. But when the Populists carried the State a second time many conditions had changed. Fairchild was accused of being an offensive Republican partisan and a non-progressive educator. Articles appeared in several leading papers of his own party criticising his management of the College. The newly organized Board of Regents took him to task for an existing deficit of several thousand dollars, and, seeing the clouds thicken in all directions, Fairchild resigned. (See Chapter XII.)

President Fairchild was a born disciplinarian, not only of students, but of all who came in contact with him. His will was law to his collaborators, though he ruled with easy grace and perfect dignity. He was not a scientist in any sense of the term, but his studies and work in English literature had given him the ability of polished and careful expression, and this, connected with natural ability, a graceful stature, a bright eye, and a natural tact, made him a power. He was a good logician and a man of

constant growth. He was systematic—a man of order and correct habits—a master of all details of his work.

Educational ideals are subject to the general laws of evolution. President Fairchild was the product of a school of pedagogics that passed its zenith several decades ago. He was a strong believer in popular education, and had no use for early specializing, substitute studies, electives, and short courses. He often expressed himself that the farmers' institute could do but little good beyond the inspiration to thinking and reasoning which it evidently pro-



The Faculty of 1888.

duced. He believed that the thoroughly educated man or woman could easily acquire technical knowledge of any kind, and he strenuously opposed technical training as a substitute for general training. The question of dividing the course of study into special courses or schools—a school of agriculture, a school of domestic science, a school of engineering, etc.—was often discussed by the Faculty, but found little favor with him. His ideal was the harmoniously developed man or woman.

The incidents connected with the resignation from the executive chair and the departure from Manhattan are told in another chapter of this volume. Among the friends and patrons of the College there were many who did not coincide with him in some of his educational maxims. When in the spring of 1897 the fusion party came into power, the newly appointed Board of Regents disagreed with him, formulated a code of "fundamental principles" to which he would not subscribe, and forced his

resignation. He departed from the College where he had worked and taught feeling to his end that he had been misunderstood and wronged.

The last four years of his life were comparatively uneventful. After a long-needed rest with friends and relatives in the eastern states, during which he wrote a book on "Rural Wealth and Welfare" and a pamphlet on "Populism in a State Educational Institution," he accepted a call to the chair of English literature at Berea College, Kentucky. His children, of whom he had five—two daughters and three sons—were a constant source of happiness to him. The oldest of the sons became a Unitarian minister, the second a medical specialist, and the third is one of the most widely known experts of the U. S. Department of Agriculture. Doctor Fairchild died after a lingering illness, at Columbus, Ohio, on Friday, March 15, 1901, and was buried in Berea, near the resting place of his brother, E. H. Fairchild.

PROF. C. C. GEORGESON.

Prof. Chas. C. Georgeson, M. Sc., of the chair of agriculture, came to this country from Denmark when a youth. He began his work as a gardener and general horticulturist, passing his apprenticeship in this line in his native land. A year after he landed he entered the Michigan Agricultural College, from which he graduated in 1878. He was at once offered the position as assistant editor of the *Rural New Yorker*, published in New York city. That position he held for two years. In the fall of 1880 he was chosen professor of agriculture and horticulture in the Texas Agricultural College. This was followed in 1885 by an offer from the Japanese government to fill a similar chair in the Imperial college of agriculture in Tokio, which he accepted. He remained in Japan nearly four years and returned to the United States in the fall of 1889. Shortly after his return he was invited to take the position of professor of agriculture in the Kansas State Agricultural College. He accepted the offer in January, 1890, and remained here nearly eight years, till September, 1897.

Professor Georgeson's work in Kansas is well known to the farmers of the State. The experiment stations maintained by the national government had just been fairly started when he came to Kansas, and his work in that line at Manhattan may be traced through the thirty bulletins which he wrote while here. Experiments in cropping, especially methods of culture best adapted to Kansas conditions, and experiments in steer feeding, were the main features of his work. The soy-bean was introduced into

this country for the first time by Mr. Georgeson at the Kansas station in 1890. He sent to Japan for the seeds and grew them that year at the College. The scientist found it to be a valuable drouth-resisting plant and grew it extensively and distributed the seed widely gratis to the farmers of Kansas. He also introduced the growing of this bean as a second crop after wheat, and plowed it under for green manure if it failed to ripen. Professor Georgeson proved by his feeding experiments that the meal of the soy-bean was more valuable than linseed oil-meal for both steers and hogs, and that the farmers could raise them at a fraction of the price per ton that the oil-meal costs.

In January, 1893, Secretary of Agriculture Rusk sent Professor Georgeson to Europe to investigate the dairy industry in Denmark. There was at that time a great revival in the dairy industry in the United States, and Denmark stood at the head of the list of dairy countries. He considered it important to obtain authentic detailed data in regard to the methods practiced by the Danes, and especially the reasons for the superiority of their butter, which always sold several points higher in the English markets than butter from other countries. The results of the professor's investigations were published by Secretary Morton in a report entitled "The Dairy Industry of Denmark."

When the Populists assumed control of the College in 1897 Professor Georgeson resigned and took the civil service examination for an assistantship in the United States Department of Agriculture. He was first appointed assistant in the division of agrostology and was sent by the department to the Panhandle of Texas to investigate the pasture conditions in that locality. In March, 1898, Mr. Georgeson was appointed special agent in charge of the Alaska agricultural investigations, and started for the North, where he has since remained. During a whole decade he has worked in that semi-arctic region, testing its possibilities for raising grasses, vegetables, and grains. He has also made extensive experiments with the islandic reindeer, the northern sheep, and milch cows. His reports form one of the most interesting parts of the annual literature of the U. S. Agricultural Department.

MRS. NELLIE S. KEDZIE-JONES.

Prof. Nellie (Sawyer) Kedzie-Jones, M.Sc., was born in Madison, Me., August 2, 1858. Her education was begun in the village schools of her native state. In 1870 the Sawyer family moved to Ottawa, Kan., where she attended a private school taught by Prof. and Mrs. M. L. Ward (See his biography in chapter VII). She then spent two years in the Kansas State Agricultural College,

graduating with the class of 1876. After teaching a year at Milford, Geary county, Kansas, she was employed four years as one of the teachers in the graded schools of Ottawa.

In 1881 she married Robert F. Kedzie, professor of chemistry in the Mississippi Agricultural College, who, for a term or two while his brother, Wm. K. Kedzie, was on a leave of absence in Europe, had taught classes in Manhattan. The professor died at Starkville, Miss., after a brief illness, and Mrs. Kedzie, in 1882, accepted a call by the Kansas State Agricultural College to teach household economy. The next year the College gave her the degree of M.Sc., and in 1887 made her professor of household economy and hygiene, which position she held till 1897, when she resigned because of the resignation of her friend and protector, Pres. Geo. T. Fairchild. From Manhattan she went to Peoria, Ill., where she accepted a similar position in the Bradley Polytechnic Institute, a filial of Chicago University, and taught there for about five years. In 1901 she was married to Prof. Howard M. Jones, of Berea College, Ky. They remained there till 1903, when he exchanged the professor's chair for the pulpit and accepted a call by the Congregational church of Kalamazoo, Mich., where they still reside.

Mrs. Kedzie-Jones was an energetic instructor, a natural disciplinarian, and a warm-hearted advisor. The young women of the College called her their College mother. She took hold of the Domestic Science Department when the institution possessed but few means, and she produced wonderful results in spite of the lamentable lack of suitable quarters and apparatus. Hundreds of young housekeepers and scores of manual training teachers are indebted to her for their training in the work and graces of true womanhood.

PROF. A. S. HITCHCOCK.

Prof. Albert S. Hitchcock, M.Sc., was born at Owosso, Mich., September 4, 1865. His father, whose name was Peter Hughes, died when Albert was less than two years old, and he was adopted by his stepfather by name of J. S. Hitchcock. When the boy was about five years old the family moved to Kansas, living for awhile in Ottawa and Atchison. Later they moved to Lincoln, Nebr. At Atchison he entered the high school, but he was a frail child and it was decided that he stay out of school a while. He spent a year on a farm near Lincoln where, as he often said, he got his first lessons in agriculture. Another year was spent in Netawaka, Jackson county, where he went to school in winter. For years he had planned to go to an agricultural college and to become a

farmer. With this in view he finally entered the Iowa State Agricultural College, at Ames, Ia., and graduated from the agricultural course in 1884, with the degree of B. S. A. In addition to the regular course, he took several extra studies—one year of botany, one term of commercial law, and two years of special chemistry. He was much interested in chemistry, and during his senior year he became laboratory assistant. In 1885 he took a postgraduate course in chemistry and some work in advanced physics. He was also assistant in chemistry, but during all his course he had been very fond of botany, and so he took a second year of postgraduate work—chiefly in botany, getting the degree of M. Sc. in 1886.

In that year he was appointed instructor in chemistry in the Iowa State University, at Iowa City, where he taught for three years. In September, 1889, he became first assistant at the University Botanical Garden, at St. Louis, where he remained till his call to Manhattan, in 1892. In the winter of 1890-'91 the regents of the university sent him on a trip to the Bahamas and Jamaica to study the flora of those southern islands.

Professor Hitchcock remained in Manhattan, as the head of the Department of Botany, for nine years, and is remembered by his colleagues as an enthusiastic and untiring student of plant life and a very effective teacher in the class room and the laboratory. While here he was botanist to the State Board of Agriculture, the State Horticultural Society, and the State Experiment Station. His departure for Washington, D. C., where he entered the Bureau of Plant Industry of the Agricultural Department as expert in taxonomic work, was a great loss to the Kansas State Agricultural College.

PROF. J. T. WILLARD.

Prof. Julius T. Willard, M. Sc., D. Sc., was born April 9, 1862, near Wabaunsee, Kan. His mother, born in Ohio, was a daughter of emigrants from Germany, who finally located near Alma, Kan., in 1855. His father was of some of the oldest of New England stock, coming to Kansas in 1856 with the colony led by C. B. Lines, widely known at that time as Beecher's Rifle Company, of whom Whittier wrote the well-known poem beginning:

We cross the prairies, as of old our fathers crossed the sea,
To make the West, as they the East, the homestead of the free.

The boy was brought up on the farm, but had the advantage of attending the best school in the county at that time. In November, 1879, he entered the State Agricultural College, and was graduated in 1883. He extended his course one year in order to

take special work in chemistry. During this time he was a student assistant in the Chemical Department and became familiar with its every detail.

Upon graduation he was made assistant in chemistry. Examination of the College catalogues shows that he was the first to be there recorded as student assistant, assistant, assistant professor, or associate professor. In 1887-'88 he studied chemistry at Johns Hopkins University. While there he was elected to the position of assistant chemist of the newly organized Experiment Station here. In 1897 he was made professor of applied chemistry and chemist of the Experiment Station; in 1900, director of the Experiment Station, and in 1901, professor of chemistry. In 1886, in connection with Prof. Geo. H. Failyer, he compiled a laboratory manual for the use of the classes in analytical chemistry, and in 1894 he published "The Organic Compounds of Everyday Life," as a textbook for his classes in organic chemistry.

In 1887 he received the degree of Master of Science from this College and in 1908 he was given the degree of Doctor of Science. In 1906 he was relieved of the directorship of the Experiment Station in order that it might have added responsibilities attached to it which would require the entire time of the director, but in 1908, being vice-director, he was again drafted to take charge of this work for half a year till another party could be found to relieve him.

Some of the earliest Experiment Station work with which Professor Willard was connected was upon sorghum, for which at that time great hopes were entertained as a sugar-producing plant. Before the establishment of the Experiment Station it had occurred to him that it might be possible to improve the sorghum plant in respect to its sugar-content by planting the seeds from stalks which by separate analysis were found to be richer in sugar than their fellows. He conducted a little investigation of his own for two years before he left for study at the Johns Hopkins University. In this he showed that there were material differences among individual stalks in respect to sugar-content and had some indication that improvement was possible by seed selection based on analytical results. These observations came to the notice of the Department of Agriculture and the idea was taken up by the Bureau of Chemistry and exploited in Kansas by it for a number of years. In the meantime the Experiment Station had been established here, and it conducted similar experiments. These experiments were continued six or eight years, and amply demonstrated the possibility of improving this plant by the means

indicated. It was not, however, found commercially practicable to manufacture sugar from sorghum, and hence thus far technology has not profited much by the experiment. This work is described in bulletins Nos. 5, 16, 25, 36, and 43. The account of his first experiments was published in the Transactions of the Kansas Academy of Science for 1886. He was also interested in work upon sugar beets, extending over several years. This is recorded in some of the bulletins named above and also in bulletins Nos. 78, 83, 94, and 103. Together with other members of the staff, he conducted experiments in soil moisture, in the planning and execution of which he had an important part, the later ones being altogether in his charge. These experiments investigate the effects of different kinds of tillage upon the conservation of soil moisture. Exact trials were made touching the influence of chemical fertilizers upon the loss of soil moisture both in pots and in carefully prepared outdoor plots.

In connection with others, but chiefly at his suggestion and through his persistency, experiments were begun and continued for a series of years looking toward the improvement of the protein-content of Indian corn by seed selection based on analysis of individual ears. The results demonstrated the feasibility of this, and some specimens of corn of extraordinarily high protein-content were produced. These experiments are described in bulletin No. 107. Bulletin No. 103 gives an account of a number of digestion experiments with Kansas feeds. These were conducted under his direction and were in part upon feeds which had not been subjected to such experiments previously.

The bulletin in which Doctor Willard takes the most pride is No. 115, in which he describes a method which he discovered for exactly calculating a ration of certain specified characteristics. Up to that time it had been necessary to make a guess at the proportions in which the several constituents should be taken, make calculations based on that guess, and then make additional guesses and calculations for nearer approximations to the desired conditions. This bulletin, now practically out of print, has been in constant demand by students of various agricultural colleges since it was issued. Previous to its appearance several writers had declared that such a calculation was a mathematical impossibility.

Other bulletins by the doctor have treated of fertilizers and feeding-stuffs. He has now in hand a large amount of unpublished matter on experiments that have been under way for several years, on milling tests of wheat, baking tests of flour, and addi-

tional experiments in respect to the digestibility and nutritive value of prairie hay and alfalfa.

Doctor Willard is a life member of the Kansas Academy of Science, a fellow of the American Association for the Advancement of Science, and a member of the American Chemical Society and of several other scientific societies. He is ex-officio chemist of the State Board of Agriculture and the State Board of Health, and has done a large amount of highly responsible chemical work in both capacities. In the summer of 1906 Doctor Willard visited central Europe in behalf of the Experiment Station to study the methods of those countries with regard to laboratory and field experiments.

The professor is an untiring worker in the laboratory, a stern disciplinarian in the class room, and a valuable counselor in the business meetings of the Faculty. No one of the teachers of the College has contributed more toward a logical development of its courses of study and no one has done more valuable experimental work for the agricultural interests of the State than Doctor Willard.

The INDUSTRIALIST, the weekly 16-page journal published by the Kansas Agricultural College, is now in its 35th year. We believe it is sent to every newspaper in Kansas, and some of the editors have probably received it from the first issue. As a piece of printing it is perfect—it is now issued by the new school of printing. It has always been edited by the professors in the College. Many of the articles are on the farm and shop experiments constantly under way at the school.—*Pointers*.

Recognize God. Failure to do this
is business blunder, a financial error,
a social mistake, as well as a griev-
ous sin. ✕ ✕ ✕

Local Notes.

The present senior class numbers about 130 students.

Professor Walters went to Topeka last Monday to inspect the methods of laying street pavements in the residence streets of the capital city.

Professor Willard, advisory member of the State Board of Health, attended the meeting of the board Tuesday and Wednesday of this week, at Topeka.

* At a recent meeting of the stockholders of the *Students' Herald*, C. J. Stratton was reelected as business manager and G. T. Ratcliffe was elected subscription manager.

Washburn College had bad luck last Tuesday afternoon in the Manhattan Athletic Park. Our team beat them by a score of 10 to 4. The game was a great "swatfest" for the Aggies.

Prof. A. M. TenEyck's picture in the *Kansas Farmer* (we mean the cut in the subhead of the professor's own department) is a "delusion and a snare." The professor is a handsomer man.

The seniors have had good success with their canvass for the "Royal Purple of '09." They have already sold about five hundred books. The volume is being printed by a Kansas City firm.

The first public game of the spring term was played in the Manhattan Athletic Park March 26, between the White Sox, of Topeka, and the Aggies. We beat them by a score of 3 to 2. Nearly a thousand seats were occupied.

The city is having Bluemont Avenue graded. A brick sidewalk will be laid on the north side, and wide strips of parking with double rows of trees will be provided. In another year the avenue will be one of the finest thoroughfares of the growing town.

Bangora, No. 21887, an Ayrshire cow belonging to the Dairy Department, has been making an average net return during the past two months of about \$9.50 per month. This record is obtained by figuring the actual cost of feeds and butter fat at prevailing prices.

The Poultry Department has again turned loose its flock of pheasants. They came home like good children last fall, when the weather grew ugly, and were fed all winter with the other poultry. During the summer they will probably roost in the orchards and forest plantations of the College farm, unless some fool of a hunter kills them to satisfy his craving for murder.

Director Ed. H. Webster, of the Experiment Station, has published a press bulletin containing "An Explanation of the Kansas Feeding-Stuff Law," treating the questions: How does the law define feeding-stuffs? What classes of feeding-stuffs are subject to the law? Under what conditions does the law apply? What must the manufacturer or dealer do? What are the requirements for labeling? On what feeding-stuffs must an inspector tax be paid? What are the penalties? What are the provisions regarding adulteration of feeding-stuffs? Will the Experiment Station make analyses?

The K. U. Glee Club will give a concert on Monday night, April 5, in the Manhattan opera-house. The admission will be 50 cents for the reserved seats and 25 cents for the gallery.

Last winter the College received \$35,000 from the State for the purpose of buying additional land for its experimental work, but as the appropriation is not available till next July the Agronomy Department had to rent some hundred acres this spring.

The Domestic Science and Art Departments held their annual exhibition March 24, in the new Domestic Science and Art Hall. The cooking exhibition consisted of practical demonstrations of the different classes. The freshmen class had prepared sample dishes of the foods which they had studied. The junior girls had prepared a five course dinner and had properly arranged the dining-table and room for serving it. In advanced cookery the work of preparing, preserving and canning is taught, and the exhibit of canned fruits certainly looked rich and tempting. A most interesting part of the cooking exhibition consisted in the display of invalid trays, prepared by the short-course girls. The spacious reception-rooms were decorated with ferns and palms and the young women served refreshments to the visitors. The exhibit of the Domestic Art Department was equally interesting. Miss Becker and her assistants showed the work of the short-course and of the second- and third-year classes, consisting of single garments and complete dresses. The "local" could not describe the exhibits if he should try, but they were daintily made and beautifully arranged. In addition to this hand-work by the domestic art classes there was a beautiful exhibit of the work of the young women who study color and design in the Drawing Department. This work, taught by Miss Weeks and Miss Putnam, showed much originality. There were stenciled curtains, portieres, pillows and scarfs decorated by different processes and in different styles. On the tables were sketches showing color schemes for house decoration, and essays on subjects pertaining to color use and color relations. The exhibition was a grand success, and an improvement over all similar efforts of the past. It showed that the domestic science course is doing systematic and well-directed work in all its different branches, and that the five hundred young women enrolled are appreciating their opportunities.

Alumni and Former Students.

W. I. Joss, '95, has moved on to his ranch in the Panhandle of Texas, near Hereford, in order to regain lost health.

A son, David Newton Simmons, was born March 7 to Mr. and Mrs. Newton Simmons, in Victor, Colo. Mrs. Simmons was formerly Edith Lantz, '96.—*Alumnus*.

J. L. Pelham, '07, has resigned his position as professor of agriculture in the Western State Normal School at Hays and has taken charge of the Underwood orchards near Hutchinson. Mr. Pelham's experience has fitted him admirably for his new position.

John M. Scott, '03, is keeping up the good work of endeavoring to improve the agriculture of the South. Bulletin No. 96 of the Florida Experiment Station, of which Mr. Scott is agriculturist, treats of "Steer-feeding," and press bulletin No. 110 is on "Producing Fertilizer on the Farm."

Ada (Quinby) Perry, '86, is spending the year in Champaign, Ill. Two of her daughters are attending the University there. Her husband, E. H. Perry, '86, is at their new home in Plainville, Texas, gathering in the wherewith. He is in the land business still, and is very enthusiastic over that part of the state.

Changes of address: F. E. Johnson, '99, O'Neill, Neb.; Mrs. Belle (Selby) Curtice, 201 West Armour Blvd., Kansas City, Mo.; R. E. Caldwell, '08, Wooster, O., care of Experiment Station; L. A. Doane, '04, Oglesby, Ill., Box 105; J. S. Houser, '04, Experiment Station, Wooster, O.; M. G. Smith, '08, Wellington, Kan.; A. E. Blair, '99, 815 Tyler street, Topeka, Kan.

H. C. Rushmore, '79, 2048 North Fifth street, Kansas City, Kan., uncorks another consignment of enthusiasm in the last number of the *Alumnus*. This time it is to propose a grand excursion by the alumni and Faculty to the exposition at Seattle next July, at the time of the International Epworth League Convention. He wishes to hear from every one likely to be able to take part in such an excursion, which would start from Kansas City with a special car for the College crowd.

A recent letter from Dr. L. B. Jolley, '01, reads as follows: "I sold my practice at Gurnee, Ill., and bought a larger one at North Chicago, which is only eight miles from Gurnee. Consequently I have taken a portion of my practice with me. We just moved here February 15. Here I have more office work and surgery to do than I had at Gurnee, which was most all country practice. North Chicago is a manufacturing town on Lake Michigan, thirty miles from Chicago."—*Alumnus*.

C. H. Thompson, '93, in addition to his work in the Missouri Botanical Garden, has been appointed collaborator in the Bureau of Plant Industry. Most of his work for the government will be done in St. Louis, but it will also take him into the semi-arid region of the Southwest, there to study desert and semi-arid conditions and the native plants. Next summer he expects to go as far as the coast region of southern California, and will probably call on some of the alumni who live in the far West.—*Alumnus*.

The Cuban government has asked for the resignation of all the Americans on the Experiment Station staff at Santiago de las Vegas. In addition to Dr. N. S. Mayo, Chief of the Department of Animal Industry, well known to many alumni because of his long connection with this College, this affects J. S. Montgomery, '07, assistant in animal industry, J. S. Houser, '04, assistant in vegetable pathology and entomology, and C. F. Kinman, '04, assistant in horticulture. The object of these changes is said to be to supply more places for the horde of hungry office-seekers.

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F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....	Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....	Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....	Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....	Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....	Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.)	Professor of Dairy Husbandry
JOHN O. HAMILTON, B. S. (Chicago).....	Professor of Physics
MRS. MARY P. VANZILE (K. S. A. C.) (Iowa State College) ...	Professor of Domestic Science
JOSHUA D. RICKMAN.....	Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training	
MISS ANTONETTA BECKER (Drexel)	Superintendent of Domestic Art
ROBERT J. BARNETT, B. S. (K. S. A. C.).....	Principal Preparatory Department
MISS GERTRUDE BARNES.....	Librarian
JOHN H. MILLER, A. M.....	Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.).....	Secretary
WILLIAM R. LEWIS.....	Custodian

ASSISTANTS.

JACOB LUND, M. S. (K. S. A. C.)	Superintendent Heat and Power Department
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.).....	Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.).....	Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard).....	Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.).....	Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.).....	Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.).....	Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago).....	Assistant Professor of Mathematics
ROBERT E. EASTMAN, M. S. (Cornell University).....	Assistant Professor of Forestry
LELAND E. CALL, B. S. (Ohio State University).....	Assistant Professor of Soils
L. E. CONRAD, M. S. (Lehigh)	Assistant Professor of Civil Engineering
K. W. STODDER, D. V. M. (Iowa State College).....	Assistant Professor of Veterinary Science

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST

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MANHATTAN, KAN., APRIL 10, 1909.

No. 23

Some Causes of Failures in Concrete.

The use of concrete has increased enormously in the last few years. New uses for it have been discovered and it has been increasingly applied to purposes for which it had formerly been used. This condition has been brought about largely, no doubt, by a considerable decrease in the cost of cement, the most expensive ingredient of concrete, and by an increasing appreciation of its valuable properties which render it suitable for widely differing purposes. The rapid increase in its use has made it necessary for large numbers of workmen to be employed who were unfamiliar with the fundamental principles of concrete making, and for men untrained in this kind of work, to design and build concrete structures. The natural result has been that some failures have occurred, due in most cases, not to the fact that concrete is not adapted to the purposes for which it was used, but to ignorance of its properties, and consequent poor design or imperfect workmanship.

As concrete is commonly made, it is composed of cement, sand, gravel or broken stone, and water, more or less thoroughly mixed. When this mixture is allowed to stand, a chemical change takes place in which the cement hardens, or *sets*, and binds the different particles of sand and stone together. This setting is not a mere drying process, but is a true chemical reaction. The water, instead of evaporating, unites with the cement and forms new chemical compounds. This action occurs more rapidly at first and then decreases gradually and eventually ceases. Under favorable conditions a well-made concrete will have attained about one-half of its ultimate strength at the end of the first week, and about two-thirds at the end of the first month. The strength slowly continues to increase until it attains practically its maximum at the end of one or two years, the period differing with different cements. The binding action of the cement in well-made concrete is so strong that, when specimens are broken, even rounded pieces of hard gravel will often break before pulling out of the mass.

A thorough familiarity with the underlying principles of concrete making is absolutely necessary for intelligent work. There are so many variable factors affecting the strength and durability of concrete that methods which give satisfactory results in some cases may be wholly inappropriate in others. Probably most cases of failure can be traced directly to one or more of the following causes, which will be discussed briefly, in order:

1. Use of improper materials.
2. Incorrect proportions.
3. Poor mixing.
4. Improper methods used in placing.

For practically all kinds of work, Portland cement is to be preferred to the natural brands. For any large or important work the cement used should be subjected to rigid tests by a competent engineer. For smaller jobs this involves too much expense and delay, and one can be reasonably sure of good results if he uses a standard brand of cement which has proved satisfactory on other work. There are several first-class cements manufactured in Kansas that are suitable for concrete for any of the purposes for which it is used and which can be used on small jobs without question.

The cement when used should be in the form of an impalpable powder, free from all grit and lumps. If the latter are present they indicate that it has been exposed to moisture and has partially set. It has therefore lost a part of its cementing value and should be rejected.

The sand should be clean and not too fine. The presence of mud, either as a fine coating on the grains or as balls, will weaken the concrete and make it unreliable. A simple test for cleanness is to rub a handful of moist sand between the palms of the hands. It should not discolor the palms. A sand containing a mixture of coarse, medium and fine grains is to be preferred for most classes of concrete work, for reasons that will appear later.

Specifications often require that concrete sand shall be *sharp*, *i. e.*, that the grains shall not be rounded, but comparative tests do not seem to indicate that this is necessary. Far more important are the requirements noted above, that it shall be clean and coarse.

Rock screenings may be used instead of sand, but if they are from soft stone the resulting concrete may not be as strong as with good sand.

The stone to be used should preferably be hard and dense, though good results can be obtained from limestones and others

of similar grade. It should be remembered, however, that if the stone is soft the resulting concrete will be weaker than if it is hard, and this should be taken into account in proportioning any structure in which the softer stone is to be used.

The size to which it should be broken depends on the use to be made of the concrete. For thin walls, floors, and sidewalks, the greatest single dimension of any piece should be limited to from three-fourths of an inch to one and one-half inches, according to circumstances, while for heavier parts the size may be increased to two and one-half inches or three inches without detriment. In any case, if much fine material is present better results will be obtained if this is screened out and mixed with the sand. Clean, coarse gravel, if available, may be used instead of stone with good results. Cinders are sometimes used, but this practice is to be condemned, as they make a weak, unsatisfactory concrete.

The ideal proportion for the ingredients of concrete is secured by using just enough sand to fill the voids, or open spaces, in the broken stone, and enough cement to coat thoroughly each particle of sand and stone and to fill all voids in the mixture. In practice, on account of the difficulty in securing a uniform mixture, a slight excess of sand and cement over the above amounts must be used.

The percentage of voids in the stone, and hence the amount of sand that should be used with a given volume of it, depends on the relative sizes of the particles of the stone. If these are all of one size, whether this be one-half inch or two inches, the percentage of voids will be higher than in a mixture of coarser and finer particles. The same principle applies to the voids in the sand. Coarse sand usually comes mixed with quite a large proportion of finer particles, while fine sand runs more nearly uniform in size. The percentage of voids in the former is hence less than in the latter, and less cement is therefore required to fill these voids. Further, the total surface area of the sand grains in any given volume is less for coarse sand than for fine, and therefore less cement is needed to coat these surfaces as required. Consequently a less proportion of cement to sand is required for the same strength with coarse sand than with fine, and in this fact lies the superiority of coarse sand for concrete work.

On account of this principle, a bare statement of the proportions used does not indicate with any degree of accuracy the richness of the concrete. Thus, one made of one part of cement to eight parts of sand and stone may be richer and stronger than one of one part cement to six parts of sand and stone, if in the former case the materials are well graded in size while in the latter case they are not.

In many cases concrete is made of cement and sand only, omitting the stone or gravel, either because it cannot be conveniently obtained or because of the inconvenience it would cause in handling the concrete. It should be remembered, however, that only that part of the cement which is ordinarily used in coating the pieces of stone is available for use with more sand when the stone is omitted. Hence the quantity of sand used for a given amount of cement, in a cement and sand mixture, should be considerably less than the quantity of sand and stone used with the same amount of cement in the ordinary mixture. Thus if one part of cement, three parts of sand and six parts of stone form the ideal proportions in a given case, a concrete of one part of cement to five parts of sand may be as strong as one using sand and stone in the proportions above given, but one containing one part of cement to nine parts of sand certainly would not be. Much of the trouble with this kind of work is due to lack of appreciation of this principle.

The only scientific way to proportion the materials in any case is to base the number of parts of each on a mechanical analysis of and a determination of the voids in the sand and stone, or sand if no stone is used. A much more nearly correct proportioning can be made, however, when this analysis is not feasible, if the principle of "ideal proportions" is borne in mind than if a rule of thumb method is used.

For some kinds of work more or less strength is desirable than would be given by the ideal proportions. In such cases the amount of cement may be increased or decreased, but the ratio of the sand to the stone should be kept about the same as before.

The amount of water which should be used depends to some extent on the use to be made of the concrete. For building blocks, for instance, with many types of machines the mass must be only somewhat moist, in order that the forms may be removed immediately and again used. Best results are obtained with least labor, where circumstances permit, if sufficient water is added to reduce the mass to a rather sloppy consistency, but without free water.

Many failures in concrete can be traced directly to insufficient or careless mixing. No matter how carefully the materials may be selected and proportioned, if they are poorly mixed the results are likely to be unsatisfactory. The important point to be observed is this—every particle of sand and stone should be thoroughly coated with cement, and the remaining cement should be uniformly distributed throughout the mass. The sand, stone and

water should also be uniformly distributed, *i. e.*, the mass should be homogeneous. Either hand or machine mixing if properly done gives good results. The former method requires more labor and is more likely to be neglected than the latter, so that when both are available machine mixing is to be preferred.

Before placing concrete a good foundation or bed should be prepared. This is especially true in the case of floors and sidewalks. If the foundation is not well compacted, trouble is likely to result from uneven settling. This will cause the concrete to be unsupported in places, and, as it is not well adapted to resisting bending stresses unless reinforced, it may break and settle with the bed. If it must be placed on a fresh fill, the latter should be well wet down and thoroughly tamped till there is no danger of further settling.

In placing concrete great care should be taken to avoid the separation of materials. If it must be dropped from a considerable height, a chute should be made to carry it and it should be again mixed at the bottom of the chute if necessary to reduce it to a homogeneous mass.

The concrete should be well tamped or spaded in place to avoid any air pockets. The importance of this operation is not generally appreciated as fully as it should be. Tests show that the strength and density of the concrete is increased to a very considerable extent by this method. In walls, a spade should be thrust between the forms and the concrete and the stones worked back from the surface so that a smooth, uniform face will be presented when the forms are removed.

If the placing is not continuous, great care should be taken to get a good bond between the old and new concrete, if it is important that a crack should not exist here. The surest method of accomplishing this is to insert short steel rods into the concrete before it has set, when work is to be interrupted, leaving half of the length exposed to be bedded in the new concrete when work is again begun. Whether the rods are used or not, the surface of the old concrete should be thoroughly wet and a layer of thin cement paste applied to it before fresh concrete is laid.

In making sidewalks and floors it is customary to make the base of rather a lean concrete, and to use an upper layer of rich mortar for a wearing surface. When this is done the base should not be troweled nor allowed to set before the top layer is applied, as this will make it difficult to secure a good bond, and the latter may crack off as a result.

In long stretches of concrete, as in sidewalks and long walls,

unsightly cracks will appear as a result of contraction due to change of temperature unless some method of overcoming the difficulty is used. These cracks may be prevented by imbedding steel rods in the concrete when it is being placed. A more common method is not to try to avoid the cracks, but to determine where they are to appear by cutting through the concrete after it has begun to set, or by laying the concrete in sections and purposely providing a poor bond between these sections. These predetermined cracks are made straight and regular, and instead of producing an unsightly effect they serve to vary the monotony of a plain surface.

Enough has been said to indicate that to insure success with concrete one concerned with its use should be thoroughly familiar with the fundamental principles governing its behavior under different circumstances, so as to be able to modify his methods to suit the varying conditions that will arise in practice. Failures which do occur should be analyzed and traced to their true causes, so that subsequent errors of the same nature may be avoided and the number of failures reduced to a minimum.

ROY A. SEATON.

The Boss As We See Him.

In a leader in the "Fourth Annual Reunion Bulletin of the Topeka Daily Capital Folks," published January 1, 1909, Dod Gaston speaks of the editor-in-chief, Arthur Capper, our newly appointed Regent, in the following interesting manner:

"In a varied and more or less eventful career passed on, I suppose, not fewer than a hundred different newspapers I recall only one man of whom I was actually afraid. I have had probably no less than a dozen hand-to-hand encounters with aggrieved readers. I have faced, at a low estimate, a thousand brawny men who came in to whip the editor and have calmly, but with the joy of conflict surging in my breast, talked them out of it. Upon a time a gent cat-footed up behind me and whacked me twice on the cranium with a loaded cane. On another occasion a thug, courageous because of frequent potations of bad liquor, and with the form of a .44 bulging the outside pocket of his sack coat, held a session with me in the open street and went away with his thirst for gore unsatisfied. But of none of these did I ever stand in much awe, nor can I recall one who ever seriously disturbed my slumbers.

"Of one man alone in all the motley crowd with which newspaper work has brought me in touch have I been really afraid. I refer to our esteemed employer, the Boss. Although I have

worked for him for more than seven years, and although our relations have always been the most friendly and intimate possible between employer and employe, I frankly admit he has me scared to death. I cannot recall that in the seven years I have been on his payroll he ever said an unkind word to me. He has never refused a favor or request, however unreasonable it may have been. And having given me perfect liberty in thought and action, he has always stood squarely behind me when I got his newspaper into trouble. These things being true, I have never understood the psychology of the 'buffalo' which he unconsciously holds over me. Long ago I quit trying to penetrate its mystery, frankly admitting its existence and being well satisfied to let it go at that.

"Once, some years ago, the Boss told a mutual friend that he never opened his copy of the *Capital* in the morning without the fear that I had overnight upset the furniture or kicked the underpinning from under his newspaper. He didn't put it in just that way, but that was what he meant. Possibly it will please him now to know that there have always been two of us who worried about the furniture and the underpinning. I never bother much about what the public thinks. Long ago I gauged the breadth and depth of public opinion and learned about how far a newspaper writer may go in the matter of smashing its idols and remain unhung. But the fear that I had whanged some idol set up by the Boss has sent me shamefaced into the office on many a morning and has caused me to slink up-stairs after the manner of a fox prospecting for poultry.

"Two or three of these grievous, sad-eyed nights followed upon some carelessly written or lightly flung paragraph I recall more distinctly than others. One occurred in mid-summer three or four years ago. I had written the thing hurriedly at the fag end of the day's work to piece out a short 'string,' and gave it no further thought until I had retired for the night along toward the short hours of morning. Then the paragraph flashed across my mind. It seemed to me at first thought to have been a grievous mistake. As I counted it over it gradually became an atrocity which no employer could pardon. In the vain hope of catching it before the paper went to press, I arose and, dressing hurriedly, hot-footed to the office. But it was as I had expected. The old junk pile which the Boss fondly took to be a printing-press was singing merrily away on the last edition and wild horses couldn't have stopped it. I slept no more that night and slunk to the office like a whipped cur next morning. Not a living soul ever men-

tioned that paragraph to me nor to anyone else, at least so far as I was able to learn. Nobody ever paid the slightest attention to it.

"Not long ago, going out one day with sword and battle-ax in hand, I hacked viciously for half a column at what seemed to me to be a social evil. As before, it came to me after I had gone to bed that what I had written had been the height of folly. All night I tossed sleeplessly on my pillow. Next day I stayed at home until noon fearful to come to the office. It turned out to be one of the most popular things I have ever written or hope to write.

"Now, the question is, why am I afraid of the soft spoken, retiring man who wears a little round hat and whose pockets bulge perennially with newspaper clippings?"

Chronological List of Regents, 1863 to 1909.

A reader of the INDUSTRIALIST writes to the local editor for a list of all the Regents who have had charge of the Kansas State Agricultural College since its beginning. As such a list may be of interest to many others, we have inserted it below. The institution has had 114 Regents since its organization in 1863.

1863 Hon. G. W. Collamore.....	1863
1863 Hon. D. P. Lowe, Fort Scott.....	1864
1863 Hon. A. Spaulding	1864
1863 Hon. W. F. Woodworth.....	1866
1863 Judge J. Pipher, Manhattan.....	1868
1863 Judge L. D. Bailey, Garden City	1869
1863 Hon. S. D. Houston, Concordia.....	1869
1863 Rev. J. G. Reaser.....	1869
1863 Hon. T. H. Baker.....	1870
1863 Rev. R. Cordley, Lawrence.....	1871
1863 Hon. Thos. Carney, Governor of State, <i>ex officio</i>	1865
1863 Hon. W. H. H. Lawrence, Secretary of State, <i>ex officio</i>	1865
1863 Hon. I. T. Goodnow, State Superintendent of Public Instruction, <i>ex officio</i> , Manhattan.....	1867
1863 Rev. J. Denison, President of the College, <i>ex officio</i>	1873
1865 Rev. E. Gale, Lake Worth, Florida.....	1871
1865 Rev. D. Earhart, Atchison.....	1871
1865 Hon. S. J. Crawford, Governor of State, <i>ex officio</i> , Topeka.....	1868
1865 Hon. R. A. Barker, Secretary of State, <i>ex officio</i>	1869
1867 Rev. P. McVicar, State Superintendent of Public Instruction, <i>ex officio</i> , Topeka.....	1871
1868 Hon. E. C. Manning, Winfield	1870
1868 Rev. Charles Reynolds.....	1874
1868 Hon. N. Green, Governor of State, <i>ex officio</i>	1869
1869 Hon. B. J. F. Hanna, Salina	1873
1869 Hon. John McClenahan, Ottawa	1873
1869 Hon. O. J. Grover, Savannah	1873
1869 Hon. J. M. Harvey, Governor of State, <i>ex officio</i> , Riley.....	1873
1869 Hon. Thomas Moonlight, Secretary of State, <i>ex officio</i> , Leavenworth	1871
1870 Rev. R. D. Parker, Manhattan	1873
1870 Hon. H. J. Strickler	1873
1870 Hon. Alfred Gray	1873
1870 Hon. Geo. W. Higinbotham, Manhattan.....	1873
1871 Rev. L. Sternberg, Fort Harker.....	1873

1871 Hon. Joshua Wheeler, Nortonville	1873
1871 Hon. Thos. A. Osborn, Governor of State, <i>ex officio</i> , Topeka.....	1873
1871 Hon. W. H. Smallwood, Secretary of State, <i>ex officio</i>	1873
1871 Hon. H. D. McCarty, State Superintendent of Public Instruction, <i>ex officio</i>	1873
1873 Hon. N. Green.....	1874
1873 Hon. J. K. Hudson, Topeka	1875
1873 Hon. Josiah Copley, Junction City	1875
1873 Hon. James Rogers, Burlingame	1876
1873 Hon. N. A. Adams, Manhattan	1878
1873 Rev. Jno. A. Anderson, President of the College, <i>ex officio</i>	1879
1874 Hon. Charles E. Bates, Marysville	1874
1874 Hon. J. H. Folks, Wellington	1877
1874 Hon. B. L. Kingsbury, Burlington	1879
1875 Hon. M. J. Salter, Thayer.....	1877
1876 Rev. J. Lawrence, Manhattan.....	1878
1876 Hon. A. H. Horton, Topeka	1877
1877 Hon. J. R. Hollowell, Wichita	1879
1877 Hon. T. C. Henry, Denver, Colo.....	1880
1877 Hon. Stephen M. Wood, Elmdale.....	1883
1878 Hon. L. J. Best, Beloit.....	1878
1878 Hon. W. L. Challiss, Atchison.....	1881
1879 Hon. E. B. Purcell, Manhattan.....	1881
1879 Hon. D. C. McKay, Ames.....	1883
1879 Hon. A. L. Redden, El Dorado.....	1883
1879 Rev. Geo. T. Fairchild, President of the College, <i>ex officio</i>	1897
1880 Hon. A. J. Hoisington, Kansas City, Mo.....	1883
1881 Hon. John Elliot, Manhattan.....	1883
1881 Hon. V. V. Adamson, Holton.....	1883
1883 Hon. F. D. Coburn, Kansas City, Kas.....	1885
1883 Hon. H. C. Kellerman, Burlington.....	1885
1883 Rev. Philip Krohn, Atchison.....	1885
1883 Hon. C. E. Gifford, Clay Centre.....	1885
1883 Hon. C. A. Leland, El Dorado.....	1886
1883 Hon. J. T. Ellicott, Kansas City, Mo.....	1886
1885 Hon. Thos. Henshall, Kansas City, Kas.....	1890
1885 Hon. T. P. Moore, Holton.....	1893
1885 Hon. A. B. Lemmon, Santa Rosa, Cal.....	1888
1885 Hon. A. P. Forsyth, Liberty.....	1894
1886 Hon. Jno. E. Hessin, Manhattan.....	1892
1886 Hon. J. H. Fullinwider, El Dorado.....	1887
1887 Hon. E. N. Smith, El Dorado.....	1889
1888 Hon. Joshua Wheeler, Nortonville.....	1894
1889 Hon. Morgan Caraway, Great Bend.....	1892
1890 Hon. R. W. Finley, Oberlin.....	1893
1892 Hon. F. M. Chaffee, Wyckoff.....	1893
1892 Hon. R. P. Kelley, Eureka.....	1893
1893 Hon. Harrison Kelley, Burlington.....	1906, 1907, 1897
1893 Hon. W. D. Street, Oberlin.....	1896
1893 Hon. Ed. Secrest, Randolph.....	1895
1893 Hon. E. D. Stratford, El Dorado.....	1895
1894 Hon. C. B. Hoffman, Enterprise.....	1899
1894 Hon. C. E. Goodyear, Oatville.....	1897
1896 Hon. S. J. Stewart, Humboldt.....	1897, 1901, 1903
1895 Hon. C. B. Daughters, Lincoln.....	1898
1895 Hon. C. R. Noe, Leon.....	1898
1896 Hon. C. G. Buckley, Scandia.....	1897
1896 Hon. A. P. Riddle, Minneapolis.....	1896
1897 Mrs. Susan J. St. John, Olathe.....	1901
1897 Hon. T. J. Hudson, Fredonia.....	1899
1897 Hon. J. N. Limbocker, Manhattan.....	1899
1897 Hon. Geo. M. Munger, Eureka.....	1899
1898 Hon. Wm. H. Phipps, Belleville.....	1899
1898 Hon. Carl Vrooman, Douglass.....	1901

1899 Hon. E. T. Fairchild, Ellsworth.....	1907
1899 Hon. J. S. McDowell, Smith Center.....	1909
1899 Hon. Wm. Hunter, Blue Rapids.....	1903
1899 Hon. W. T. Yoe, Independence.....	1901
1899 Hon. J. M. Satterthwaite, Douglass.....	1903
1901 Hon. F. D. Coburn, Topeka.....	1902
1901 Prof. E. R. Nichols, President of the College, <i>ex officio</i>	—
1903 Hon. R. J. Brock, Manhattan.....	1904
1903 Hon. C. E. Friend, Soldier.....	1905
1903 Hon. J. W. Berry, Jewell City.....	1907
1903 Hon. J. O. Tulloss, Sedan.....	—
1904 Hon. Geo. S. Murphey, Manhattan.....	1905
1905 Judge A. M. Story, Manhattan.....	1909
1905 Hon. Geo. P. Griffith, Hays.....	1909
1907 Hon. Edwin Taylor, Edwardsville.....	—
1907 Hon. W. E. Blackburn, Anthony.....	—
1909 Hon. W. A. Harris, Lawrence.....	—
1909 Hon. Arthur Capper, Topeka.....	—
1909 Hon. W. J. Todd, Maple Hill.....	—

Students' Recital.

The following program will be given in the College Auditorium, Thursday, April 15, 1909, at 8 P. M., by students in the Department of Music:

- Queen of Sheba..... *Gounod*
COLLEGE ORCHESTRA.
- (a) Canzonetta..... *Preyer*
(b) Spanish Dance..... *Preyer*
MARIA MORRIS.
- Mazurka No. 2..... *Borowski*
RUTH PLUMB.
- (a) Come Lets Be Merry..... *Wilson*
(b) Good Night..... *Chadwick*
C. H. ROBISON.
- Prelude..... *Rachmaninoff*
LUCILLE RUDOLPH.
- (a) Gavotte..... *Dancla*
(b) Spanish Dance..... *Bohm*
JOHN SCHLAEFLI.
- Bubbling Spring..... *Rive-King*
MARY AUSTIN.
- (a) Thine Eyes So Blue and Tender..... *Lassen*
(b) Ships That Pass in the Night..... *Bischoff*
MARCIA TURNER.
- (a) To Spring..... *Grieg*
(b) Norwegian Bridal Procession..... *Grieg*
MARIE COONS.
- Three Dances from Music to Shakespeare's Henry VIII..... *German*
Morris Dance Shepherd's Dance Torch Dance
CLARA KIEWER CLARA BERG
- Santa Lucia..... *Braga*
CLARE BIDDISON.
- The Loreley..... *Liszt*
DE NELL LYON.

Local Notes.

Commandant Boice has moved his office in the Armory up-stairs and has turned the old quarters over to his adjutant.

Professor Kammeyer addressed the teachers of Cloud county, at Concordia, last Saturday on "How to Teach Reading."

Pres. and Mrs. E. R. Nichols will give a reception to the Board and the Faculty next Tuesday evening at East Parkgate.

In the first of two baseball games to be played with K. U., our team came out victorious yesterday with a score of 9 to 4. The other game is being played this afternoon.

The concert in the Manhattan opera-house last Monday night by the K. U. Glee Club was well attended and those present report a vivacious and well-rendered program of student songs and glee selections. The profit from the entertainment—some ten dollars—was donated to the Manhattan city park.

Contractor Geo. Hopper has nearly completed the structural work of the new south wing of the old shop building. The stone work is finished and the carpenters are working on the roof. This wing adds much to the architecture of the old building and gives a considerable amount of floor space to the wood-working division.

Over twelve hundred students have been assigned this spring term and a few more are dropping in every day. Last year the total attendance for the spring term was 1203, so that we are certain of an increased attendance in every one of the three terms of the year. The total increase for the year will be between a hundred fifty and three hundred.

Mrs. C. B. Hoffman, of Enterprise, Kan., addressed the students in chapel last Thursday morning on the subject of tuberculosis and its prevention and cure. She spoke of the growth of the international movement with regard to the eradication of the "white plague," and invited the students to attend the exhibition of illustrative furniture, fixtures, etc., held during the week in Commercial Hall in the city. Her address was well received and applauded by the students.

Last Monday the senior class in landscape gardening, accompanied by Professor Dickens and Assistant Ahearn, visited Topeka for the purpose of securing data for making a landscape plan for the Topeka Industrial Institute. They carried surveyors' instruments and note-books, and made the measurements and observations necessary for working out the plan. Ex-Regent Robt. J. Brock was a passenger on the train that carried the party, and showed his interest by inviting the party to lunch with him at the beautiful new home of the Topeka Club, of which Mr. Brock is a member. The class greatly enjoyed the invitation, appreciated the opportunity of inspecting the club rooms, and found the day a most pleasant and profitable one.

The third game of the spring term was played in our Athletic Park last Saturday afternoon and resulted in another victory for the Aggies. This time it was the Nebraska Wesleyans who got beat. The score stood 3 to 0.

Cows are being pastured on rye since the 5th of April. The Dairy Department has just opened the second silo. They began feeding on the first silo, which has a capacity of eighty tons, October 10. This silo has furnished enough silage for a liberal feeding of twenty-six cows for six months.

The report that Col. W. A. Harris has consented to accept the position urged upon him by Governor Stubbs as the head of the Board of Regents of the Kansas Agricultural College at Manhattan, along with Arthur Capper and W. J. Tod as associate Regents, will be received as glad and welcome news by the people of that State. The Agricultural College in Kansas should be made the greatest institution of its kind in the world, because it represents the chief interest of the greatest agricultural state in the world. Under the direction of Colonel Harris and the associates selected to work with him the Manhattan school can be made a tremendous factor in the development of the State. No doubt the sacrifice of personal interests on the part of Colonel Harris in accepting the position will be very considerable, but it is a great good fortune for Kansas that such men are willing to make sacrifices for the public good. It requires men of the highest class to develop institutions of the highest class, and one combining the vital importance and the great possibilities of the Manhattan College is entitled to the best ability that can be secured to direct it. That is just what Kansas has secured in Colonel Harris and his associates on the Board of Regents.—*Kansas City Star*.

The winter-term class in principles of fruit-growing concluded their observation work by making a visit to the orchards of the Missouri Valley Orchard Company, at Tonganoxie. This orchard is rated as one of the best in the West, the trees having been propagated from cions secured by the superintendent, Geo. C. Richardson, who, previous to his planting the orchard, was engaged in the apple commission and storage business. When he found trees producing especially fine fruit of the variety, cions were obtained, and this is the main trial of the principle of selection of cions from individual trees. Mr. Richardson is president of the company, and has superintended all the work of setting, cultivating, fertilizing, and pruning. The day of the visit was the trial day for his new spraying plant, which is the only one of the kind in the State. The movable central plant consists of a traction-engine and an auxiliary wagon, on which are mounted an air compressor, pumps, and mixing tanks. The operating wagons carry two tanks, one of compressed air and another of the spray mixture, which in this instance was the lime-sulphur wash. Everything was working in quick time, the weather was ideal, and the class voted Mr. Richardson the blue ribbon as an orchardist and an entertainer.

Spring conditions are already having their influence on the amount of cream that is being brought to the College Creamery. The new "Perfection" churn, having a capacity of four hundred pounds of butter, will soon have to be used for churning.

Last month there were two hens on the poultry plant that laid two eggs in one day. These hens were trapnested, so this statement is based upon facts. Two hens on the plant laid 27 eggs each during the month of March. One was a White Leghorn and one a White Plymouth Rock. One pen of 12 Plymouth Rocks laid an average of 21 eggs per hen in March. This is considered a splendid average. Since January 1 they have done better laying by far than the Leghorns. One hundred thirty White Leghorns and Plymouth Rocks laid 2345 eggs in March.

Alumni and Former Students.

Born, to F. J. Howard, senior in 1902, and now farm foreman, and Marie (Hjort) Howard, special student in 1901, twin boys, April 6.

Robert E. Williams, '07, was graduated from the Kansas City Veterinary College recently, and has located at Wichita Falls, Texas, to practice his profession.

L. B. Bender, '04, is now chief electrician at the Puget Sound Navy Yard. This appointment was awarded him following a competitive examination last September. His address is Box 1181, Bremerton, Wash.

Ellen Hanson, '07, came to take graduate work this term but was called home by the sad news of the death of her sister, Esther (Hanson) Ross, '03. We have no particulars further. The sympathy of many friends will be with P. H. Ross, '02, and other members of the bereaved family.

Changes of address: C. E. Davis, '06, 683 Second street, Detroit, Mich.; Alice M. Loomis, '04, College of Agriculture and Mechanic Arts, Kingston, R. I.; W. A. Hendershot, '04, Beverly, Kan.; J. W. Ijams, '90, Grantville, Kan.; J. J. Johnson, '95, Cold Springs, Okla.; Ruby Buckman, '08, Conway, Kan.; J. A. Thompson, '03, Bureau of Agriculture, Manila, P. I.

Prof. Chas. H. Sternberg, Lawrence, Kan., will deliver a free lecture in the Auditorium next Friday evening, giving some of his experiences during his eventful life in the collection of fossils. Professor Sternberg was a student of this institution in the seventies, and from his earliest boyhood has been an enthusiastic collector. In the practice of his profession he has faced poverty, hardship, danger from Indians, and the impediments to travel and traffic in the wild regions of the country. His story will be interesting, illustrated by one hundred lantern slides, and well worth an admission charge. Professor Sternberg has recently written a book, "The Life of a Fossil Hunter," which has been received with much favor by the public.

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Historical Society

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(Board of Instruction concluded on last page.)

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## *Some Aspects of Job Composition.*

Speaking from a mechanical view-point, printing may be divided into two parts—composition and presswork. By composition is meant the “setting of type,” and this is further separated into newspaper, book, and job work. The names of the first two indicate clearly their nature, but the latter embraces a large variety of miscellaneous printing. In most cases, however, the term “job work” applies to all work of an office except its *own* publications. This definition is especially applicable to a “country” office. In the cities there are numerous establishments, with which no stated publications are identified, devoted exclusively to “job” printing. Their range of work varies greatly; from envelopes, cards, letter-heads, shipping tags, etc., to pamphlets, circulars, posters, blank books, and catalogues. In short, any description of work brought to an office by a customer is termed a “job” and classified as such.

Job composition deals with that portion of a piece of work which contains “display.” Specifically, it is the act of composing or “setting” a “job” in type. Taking a pamphlet or booklet for an example: the setting of the cover and title pages would comprise the “job” composition and that portion which is set in ordinary newspaper or book type is known as “straight” composition. “Straight work” requires a close application to copy, a mechanical accuracy in picking up each type, and care in uniformly spacing out the lines. Job composition requires all this and a great deal more; hence “straight work” is a stepping stone to something higher up and more difficult.

Considering the varied array of work, gotten out in many sizes and forms and for innumerable purposes, it may be said that its proper execution requires, on the part of the compositor, first of all aptitude, then skill, good taste, discrimination, and originality. Few persons embody all these requisites to a high degree yet may combine them all to such an extent that they become successful and adept in this line of work.



Job composition is at once a *mechanical* and a *fine* art. By the mechanical art is meant that part bearing upon the trade which requires practical application of the knowledge, skill and ingenuity of the artisan; the fine art lies in that phase which calls for the exercise of taste and imagination required of the artist. The work may be performed unconsciously, as in other arts; it may, because of its continuance day after day, assume the aspect of routine, and thus seemingly lack that *inspiration* which is said to dominate the successful painter in his efforts, and yet, even that quality enters into this mechanical grouping of metallic words, rules, ornaments, and dashes. The job compositor encounters days when there is lacking a mental stimulus, and he experiences difficulty in producing satisfactory work. At other times his brain is acutely active and a composition of unusual merit is readily forthcoming.

It is interesting to note as a matter of history that the style of job composition has changed greatly even in two decades. A large per cent of the type formerly designed for "display" work was flowered, shaded, sloped, and fancifully cut, and with the aid of twisted, waved and ornamental rules "jobs" were lavishly put together. Now, in the day when simplicity lends the greatest charm, we employ type of plain faces, simple, straight-line rules, and ornaments of a severe type to be used sparingly. Thus the secret of making a "job" pleasing to the eye and one that will fulfill its purpose lies in adequately displaying and properly placing the line or lines containing the important thought, grouping of other necessary yet inferior lines, and properly distributing "white space" within given measurements and restrictions of size. By "white space" is meant all space not occupied by the face of the type. In a word, a "job" to be attractive must have the proper "balance." (See examples on next page.)

This operation of "balancing" a "display composition" demands a fine sense of discrimination and a skill which comes from training. It brings into play the knack of measuring distance with the eye and the power of imagining how the "form" will look when printed on paper. Even a final adjustment takes place when the proof has been taken and the result is presented in black and white. Then, impossible as it may seem, the widening or diminishing of space between lines or dashes to the extent of even one seventy-secondth part of an inch produces a noticeable change in the appearance of a "job."

Another important point must not be overlooked. As the wielder of the brush selects his paints and mixes them for tints

and colors, so the compositor must select his type. A stupid selection of type faces will hopelessly ruin the chances of producing an acceptable "job," and, although a clever manipulation of badly selected lines may improve the same, no amount of "balancing" can wholly overcome its displeasing effect.

The selection of type faces requires mainly good judgment. The nature of the "job," its size, its purpose, and directions

You are invited to  
attend the  
**Fall Opening**  
AT  
**Rowley's**  
UP-TO-DATE  
MILLINERY

Lack of "balance."

You are invited to  
attend the  
**Fall Opening**  
AT  
**Rowley's**  
UP-TO-DATE  
MILLINERY

Proper "balance."

accompanying copy, must be considered. The principal aim should be: harmony.

The greatest detriment to making possible the finer attainments in job composition lies in the fact that we are living in an age of commercialism. The "job" artist labors under pressure. Although his ingenuity may be noted, it avails him nothing if he cannot combine it with speed. This limits his originality, and in an office handling a large amount of "rush" work his style tends to assume a uniform character. He has a time limit placed upon his capabilities.

Then the public has been somewhat slow to appreciate his efforts. The ordinary person who picks up a bit of printing is absorbed mainly by the thought that is conveyed and not at its technicality. Also, one may be struck with the singular neatness



or cleverness of the display and yet not be able to offer an explanation why it pleases the eye. At another time a piece of printing may jar one's sense of the artistic. Something is out of proportion or inharmonious, but the defect is not apparent except to the printer's eye. The sensation is the same as that experienced in looking at a landscape drawing which is faulty in its perspective.

An evidence of better development in job composition lies in the fact that to-day there is a distinct desire for tasty and attractive printing. People are awakening to the fact that the clothing of words in proper type garments, so to speak, doubles the force of thought to be expressed. There is a ready inclination to pay the necessary price. The demand for "job" compositors of ability cannot at present be supplied, and those who are now successful in this field are reaping a financial reward commensurate with their peculiar fitness and especial talent. E. N. RODELL.

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### ***Prof. Helen Campbell.***

(Excerpted from Dr. J. D. Walters' History of the Kansas State Agricultural College.)

Mrs. Helen Campbell was born in Lockport, N. Y., and her maiden name was Helen Stuart. Her father descended from clan Stuart, of bonnie Scotland. As a young girl she became a contributor to various periodicals for young people. The next step was writing whole books of child stories. Eight of these followed one another rapidly and several of them, like "His Grandmother" and "Six Sinners," were published in numerous editions.

Meantime Helen Stuart had become Mrs. Campbell. Her husband was an army surgeon. With him from post to post, if not from pillar to post, army life fashion, wandered Mrs. Campbell, camping, not really living, now here, now there, crisscrossing North America over and over again. She was sometimes in places where no white woman had been before. But all the time the quick eye and alert brain of the story teller were taking notes and studying the relations of facts.

One night Helen Campbell visited the famous "Jerry McAuley's mission" in New York city. "That night a champion for the wage earner was made." Misery such as was uncovered to her mind at Jerry McAuley's mission was something she had never known of before. She could not get away from it. She went and lived in the midst of it for some time, studying conditions and means of relieving them. The child stories were interrupted. Henceforth Helen Campbell was to be a sociological writer and worker. After dwelling among the poverty stricken,

the ignorant and the helpless—helpless because ignorant—she wrote a monograph on the "Problem of the Poor." A novel, "Mrs. Herndon's Income," quickly followed this. It, too, dealt with the problem of the poor. The editor of a leading New York newspaper read the book. He sent for Mrs. Campbell and asked her to write a series of letters for his journal on the condition of the poor and how to alleviate it. The result was the appearance of a remarkable set of papers called "Prisoners of Poverty." A yet wider field opened for the author, and she went to Europe and wrote another set, "Prisoners of Poverty Abroad." During that trip she investigated, especially, the situation among the hapless women wage earners of the old world. This was in 1889.

After her return from abroad she continued writing novels and essays. In 1893 she read a paper at the Chicago world's labor congress. Thereupon Prof. Richard T. Ely wrote her to come to the University of Wisconsin as special lecturer. This she did, having the post of assistant professor in the department of economics. She was also continually studying, mastering details and statistics. Naturally, being a woman, household economics claimed her attention. She wrote, studied, and experimented. "One must marry one's economic theory to experience before it can be of any value," she remarks. Mrs. Campbell has been called the mother of scientific household economics, which she has studied in both Europe and America.

Mrs. Campbell's book "Household Economics" was published in 1896. It is full of fact, science and practical instruction, the result of observation and experiences on both sides of the Atlantic. One of the foreign notes is this: "There are towns in Holland where even the stables are scrubbed daily, and a wandering fly or a particle of dust is attacked with passionate zeal. Yet indoors every principle of personal hygiene is violated at every turn." In the preparation of the volume "Household Economics," Mrs. Campbell received valuable aid from her friend, Charlotte Perkins Gilman. The two wrought together for a time in Chicago in conjunction with Jane Addams, of Hull House.

In 1897 Mrs. Campbell was elected professor of domestic science in the Agricultural College of Kansas, but she soon found that the large classes and the exacting daily program would give her but little time to devote to her literary work. The peculiar political conditions were distasteful to her, and there were serious objections made by her students and their mothers about some of her teachings. This resulted in her resignation in the following



year. There is no doubt that she was a brilliant member of the College Faculty and that in another period of the history of the institution she would have been better appreciated.

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***Prof. A. B. Brown Dead.***

From Boston, Mass., comes the news that Prof. Alexander B. Brown, A. M., the father of Asst. Prof. R. H. Brown of this College, died there of a complication of diseases, last Saturday. His body was brought to Leavenworth, where his wife, his older brother and other members of the family are interred.

Professor Brown, Sr., was the head of the Music Department of the Kansas State Agricultural College from 1886 till 1904 and will be remembered by former students as a dignified, earnest and warm-hearted old teacher of chorus and band music. He was a native of Edinburgh, Scotland, but came to the United States at an early age. He was a student in the theological course of Oberlin College, Ohio, and leader of the student band when the war of the rebellion broke out. With a majority of his band members he enlisted in the seventh Ohio infantry and became later the leader of the brigade band. After receiving honorable discharge from the army at Washington, D. C., he pursued his musical studies in Boston, graduating from the Boston Music School with honorable mention, especially as a vocalist. After an extended trip through New England in the interest of music, being solicited to accept the professorship of music and elocution in Olivet College, Michigan, he did so, and afterwards finished his literary course in that institution.

The professor then became associate editor of the *Olio and Folio*, a literary and musical journal. He organized the Michigan Conservatory of Music and Elocution, in connection with the college, and after serving it as director for ten years he resigned to accompany the ex-president of the college, Hon. S. F. Drury, to Springfield, Mo., where he assisted in the founding of Drury College and the Missouri Conservatory of Music and Elocution.

In 1881 he resigned his professorship in Drury and moved to Leavenworth, Kan., to assist his brother in the building up of the Leavenworth Conservatory of Music. While in this city he was appointed chaplain of the State penitentiary and held this position for about one year. Here he produced a set of very large and beautiful music charts, covering the essentials of musical theory—the charts which he afterwards brought to the Agricultural College and used in his class instruction for many years. The charts were designed by him and drawn in oil colors by a life

convict in the Kansas penitentiary, whose pardon the professor obtained of the governor a few years later. In 1883 he went once more back to Drury, where he remained till 1886, when he was called to the chair of music at the Kansas State Agricultural College.

Prof. A. B. Brown was a schoolmate of Pres. George T. Fairchild in the early sixties when they were students at Oberlin College, and their friendship was intimate till the death of the latter at Berea, Ky. He lived in Manhattan for eighteen years and raised his family here. His eldest son, Robert Henry, is a graduate of this College and for many years has been assistant professor of music here. Two other sons were students at this College and are engaged in concert work in different parts of the country. His wife died at Leavenworth several years ago. Professor Brown was a solid and sturdy character, a typical, positive Scotchman, a warm-hearted educator and friend, and a prompt and untiring teacher. He never was a high-grade performer on any instrument, nor a student of modern operatic music, but he was a forceful instructor of chorus singing and he knew how to lead and enthuse students to do their best in this line.

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### ***A Wheat Institute.***

There are probably one-fourth million acres of pure-bred wheat growing in Kansas to-day. The State has made wonderful progress in this direction in the last four years and has now more acres of pure-bred wheat than any other state. But farmers do not take proper care of this valuable seed, nor do they yet prepare with sufficient care the seed-bed. Therefore, the Kansas State Agricultural College issues a call for a Wheat Day, Saturday, May 1, 2 to 4 P. M.

There are two hundred thirty-six institutes in Kansas and it is hoped that all may observe this day. While wheat is the big crop in central and western Kansas, it may be greatly improved in the soft-wheat territory, and this is important when soft wheat is now at such a premium. The following topics are suggested:

1. List of growers, with present acreage, of pure-bred varieties.
2. Discussion as to relative value of different varieties.
3. Keeping wheat pure and of good quality for seed.
  - (a) By seeding in clean fields.
  - (b) By harvesting at right time, shocking and stacking carefully.
  - (c) By care in threshing.
  - (d) By care in cleaning and storing.



## 4. Discussion as to Seed-Bed.

- (a) Disking following header or binder.
- (b) Early plowing without disking.
- (c) Early listing.
- (d) Harrowing or disking after plowing or listing.

## 5. Fighting the Hessian Fly.

- (a) Early disking.
- (b) Keeping down volunteer wheat.
- (c) Late sowing.

Secretaries are requested to compile a list of growers of pure-bred wheat, with acreage and variety, send a copy to the State Institute office, and furnish same to all county papers.

J. H. MILLER,  
A. M. TEN Eyck.

The Board of Regents met April 12 at the College and adjourned after a three-days session. A large amount of business was transacted during the session. No decision was reached with regard to the presidency, but a committee of three was appointed to report on the matter at the regular June meeting. Several important offices were filled to comply with the laws passed by the last legislature. Prof. Albert Dickens, of the Horticultural Department, was elected State forester. Ex-Professor Wilson was elected State dairy commissioner. The route of the new street-car line was laid out. The new Armory was definitely located at the end of the hill southwest of the Auditorium. The list of teachers and employes was gone over and a number of changes and additions were made for next year. The Board also bought two fine quarter-sections of land northwest of the College farm. One of these was purchased of Mr. Hutchings at \$150 per acre and the other of Mr. Marlow Ingraham at \$135 per acre. The land is located about one and a half miles from the College barns and is of good quality—every acre tillable.

The Dairy Department last fall planted some eight different crops and combination of crops to determine as soon as possible the crops that would furnish the most and best feed for winter and spring pasture for dairy cows under our conditions. The planting was done late this year, and since the winter has been more severe than usual we do not consider the results as determining what might be done under more favorable circumstances; but at present, the rye will furnish from three to four times more pasture than any of the other crops planted. Speltz, barley, crimson clover and Vetch were partial or entire failures this year.

**Local Notes.**

Lawrence University, of Marquette, Mich., will play here May 28 or 29.

Professor Dickens is in the western part of the State on forestry business.

The Regents were served a luncheon by the domestic science girls last Wednesday noon.

From sixty to seventy students took the conditional examinations of winter term last Monday.

Professor McKeever will deliver the address to the graduating class of the City Normal at Wichita, May 25.

Prof. J. E. Kammeyer went to Norton, Friday of last week, to act as judge of an oratorical high school contest.

Manhattan used 5,916,388 gallons of city water during the month of March—nearly a thousand gallons per inhabitant.

Professor Willard gave a lecture on "Human Nutrition" before the Domestic Science Club of Manhattan Thursday afternoon.

While at Ames the College team was shown many kindnesses by Mr. and Mrs. Criswell, '89, and Scott and Rennie Greene, '06.

In a track meet at Alma last Saturday the College freshmen were beaten by the Alma Highs. The Alma's won eight firsts and our freshmen took seven.

The first football game with Missouri State University will be played at Columbia, Mo., on October 10. Professor Cortelyou signed the contract with the M. U. last week.

The Dramatic Club is working hard on their play, "The Lady of Lyons," by Bulwer Lytton, which is to be given Monday night, April 26. Miss Elinor Lincoln, of Topeka, is training the cast.

The recital given by the students of the Music Department, Thursday of last week, was a perfect success and well attended. The program rendered was published in the last INDUSTRIALIST.

Miss Leaffa Randall, member of the senior class, has received the sad news of the death from scarlet fever of her sister. On account of the contagiousness of the disease, Miss Randall could not go home to the burial.

The first trans-Missouri trip, under the new arrangement, of our boys proved an unlucky one. They lost both games by small margins—that with Highland Park College and that with Iowa State Agricultural College.

Never in the history of athletics at K. S. A. C. has any breach of the eligibility rules been known. The managers have always insisted that athletes be eligible before allowing them to play. This is in accordance with true college spirit and sportsmanlike decorum. It is the spirit that the student body desires to see displayed.—*Students' Herald.*



To-day, Saturday, the second team of the College will play the soldiers of Fort Riley.

Prof. Charles H. Sternberg, of Lawrence, the well-known Kansas geologist, gave an interesting lecture on "Fossil Hunting" in the College Auditorium, Friday night, April 16. The lecture was illustrated by many lantern views and was well received.

The medal offered by Professor Hamilton to the winner of the three cross-country runs this spring was won last Thursday by senior student P. McNall. Up to this time the record was held by Milligan who, in 1906, made the three miles in 19:06. McNall this year made it in 18:10.

Pres. and Mrs. E. R. Nichols gave their annual reception to the Regents and Faculty of the College Tuesday evening of last week from 8 to 11 o'clock, at their home, East Park Gate. In the receiving line with the host and hostess were the members of the Board of Regents. The spacious parlors were thronged to a late hour by the Faculty and their wives. Light refreshments were served, and all report an exceptionally good time.

If the ground and the sky are in fair condition this afternoon (Saturday) the individual track meet of the College will be "pulled off" at the Athletic Park. Professor Cortelyou expects some very good work, especially in hurdles and jumps. The intercollegiate meet will be held at Emporia on May 18. On the same date our baseball team will play the St. Marys nine at Manhattan.

William Baxter has accepted a position as landscape gardener at the Utah Agricultural College and will leave here next week. Mr. Baxter was superintendent of the greenhouse at the College here for a number of years and for the past few years has been maintaining a floral establishment. He is a thoroughly competent man and will undoubtedly fill all the requirements of his new position, though his many friends will be sorry to see him leave.  
—*Mercury*.

In accordance with old usage the President called upon the new Regents to speak to the students after chapel exercises one morning of last week. Colonel Harris responded with a short but scholarly address on the importance of agriculture and agricultural education. He emphasized the fact that the main purpose of all education is the same in its ultimate ends: to produce better men and better women and to increase wealth, peace, good-will, health, and happiness.

The Manhattan Street Railway Company is now laying its track along the south side of the College campus to a point directly opposite the Auditorium. They intend to enter the grounds somewhere at the south side and extend the track to the boiler-house, if they can get permission to do so of the Board of Regents. The power-house of the company is built, the track is practically completed, the machinery is being put in place, and in a few weeks the cars will be rumbling up and down the route.

Miss Ada Rice, instructor in the English Department, has perfected arrangements for a European trip after Commencement. She will be accompanied by Miss Birdie Secrest, '92. They intend to land at Gibraltar and Naples, go from there to Rome, Florence, Venice, Milano, Lugano, Luzerne, Interlaken, and Bern. From here they will proceed to Solothurn and join another party from this College, chaperoned by Prof. J. D. Walters. They will then go to old Heidelberg and down the classic Rhine and sail for America on August 28 from Liverpool. They intend to have a grand time.

The Music Department will give its annual concert on May 17 and arrangements are being made to make it the greatest musical event in the history of the College. The chorus will sing Carl Busch's "Paul Revere's Ride" and Lloyd's "Hero and Leander," in which two of America's greatest musical artists will have solo parts. Between the two cantatas the visiting artists will give a forty-five minute operatic program. The College orchestra will play the overture and the accompaniment to the chorus parts. The two visitors mentioned will be W. W. Hinshaw, of Chicago, who has the reputation of being one of the leading baritones of the country, and Burnap Hinshaw, also of Chicago, who is a soprano of remarkable talent. The department is giving much time and effort to the preparation of the program and expects the hearty support of the students, the Faculty and their friends in making this the great musical event of the year.

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### ***Alumni and Former Students.***

Fred Walters, '02, and Anna Bower were married Wednesday evening, April 14, at the residence of the bride's parents in Manhattan. Mr. Walters is a builder and contractor, and for the present Mr. and Mrs. Walters will live at St. George, Kan.

*Modern Methods* for April says that "Chas. P. Blachly ('05), one of the best known designing magneto experts in the country, has charge of the classes" which the Remy Electric Company, Anderson, Ind., has organized in a night school for the benefit of its new employees, thus enabling them to adjust themselves more rapidly to conditions.

The card of inquiry sent by Secretary Clemons to Jennie Cottrell, '04, came back signed Jennie Cottrell Nelson, Riley, Kan. From this it would appear that she has made an addition to her name simultaneously with change of residence. She seems, however, to have neglected to tell us all of the particulars. These her many friends would be glad to know.

A. C. Peck, '96, after being unsettled for a year or so is now located at 130½ Center Place, Los Angeles, Cal. He is proprietor of the Star Wafer Company, manufacturers of ice-cream cones, cornets, and serving dishes. He sends kindest regards for all College acquaintances and wishes the INDUSTRIALIST in order that he may keep in touch with old times and scenes.

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Cards are out for the wedding of Elenore Perkins, '00, of South Pasadena, Cal., which will take place May 3. The fortunate man is Edward Andrew Moody.

M. G. Smith, '08, and Grace Streeter, '07, were married at the residence of the bride's father, "Sunnyslope," Manhattan, Kan., Wednesday morning, April 14. They will be at home in Wellington, where Mr. Smith is prospering in the practice of his profession as a veterinary surgeon.

O. B. Whipple, '04, is the author of two excellent bulletins just issued by the Agricultural Experiment Station of the Colorado Agricultural College on "Dewberry Growing" and "Pruning Mature Fruit Trees." Mr. Whipple is field horticulturist for that station and is located at Grand Junction, Colo.

Mrs. Rowena Coman, of Boulder, Colo., was married Easter Sunday to Mr. Frank Tyler, a wealthy ranchman of that place. The wedding was a surprise to all their friends. They will live at Boulder. Mrs. Coman, formerly Miss Rowena Whaley [junior in 1880], lived in Manhattan for several years and has a wide circle of friends here who wish her a full measure of happiness.—*Republic*.

Kansas was known to lead on almost everything else, but until F. D. Coburn received a letter from Charles F. Mills, editor of the *Farm and Home*, yesterday it was not known that Kansas is the home of the cow that broke the world's record for producing butter fat. This remarkable cow belongs to Fred Zimmerman, '98, of Moray. None of the details are given in the letter. It is simply a copy of a letter sent to Mr. Zimmerman, informing him that his cow was the champion butter fat producer in a seven-day test. The cow is a Jersey.—*Capital*.

J. S. Montgomery, '07, is spending a short time here at home. He has interesting things to tell concerning Cuba and the Cuban situation. It will be remembered that Mr. Montgomery was dismissed along with the rest of the Americans at the Santiago de las Vegas station. He says that he and a young Cuban, a graduate of the Kansas City Veterinary College, were the assistants in the Department of Animal Industry. The Cuban assistant has now been made chief of the department in place of Doctor Mayo, and seven Cuban assistants have been put on the pay-roll. Six of the seven cannot read or write more than their own names.

The attention of the farm boy is too often called to those of his kind who have left the farm and engaged in other pursuits. This has a tendency to make the farm boy feel that success, position and wealth too often are found in vocations far removed from the farm. Harold T. Nielsen ['03] is a Kansas young man, born and reared on a farm in Mitchell county, educated in Kansas Agricultural College and a trained scientist, who for years has had an expert's position at a good salary with the United States Department of Agriculture and who has resigned his job to become a farmer near Abilene. An agricultural expert should do as well for himself as for the government.—*Kansas Farmer*.

Word has just been received from Nellie Kedzie Jones, '76, that her husband, Howard M. Jones, once a member of the Faculty here, has been called to the pastorate of the Lyndale church in Minneapolis, Minn. This gives him a larger field and work with western people. Mr. and Mrs. Jones leave Kalamazoo amid expressions of much regret. They expect to move next month. This week Mrs. Jones is attending the congress of the Daughters of the American Revolution in Washington, D. C., she representing the Kalamazoo chapter.

Further information concerning the death of Esther (Hanson) Ross, '03, has been received by means of letters and papers. She died of erysipelas April 1, at Mountain Home, Idaho, where Mr. and Mrs. Ross have lived for the past year. Her death was a great shock to all, as she was seriously ill but little more than a day, and only a week altogether. She was buried at her old home in Marquette, Kan., April 7. Mr. Ross will leave their children, a boy and a girl, with his parents at Webber, Kan., where he will also make his home for the present.

Miss Cora McNutt ['06], secretary of the Young Women's Christian Association, will be married in June to Dr. J. N. Davis, of Wyoming, and she expects to leave here for her home in Ottawa Saturday to prepare for the event. This evening an informal reception will be given in her honor by the members of the board of directors of the Young Women's Christian Association at the home of Mrs. T. F. Garver, 715 Harrison street. All of Miss McNutt's friends are invited to the reception, which will be from 8 to 10 o'clock. Miss McNutt has been secretary of the local Young Women's Christian Association since September, 1907, coming here from her home in Ottawa. She is a graduate of the State Agricultural College at Manhattan, and it was there that her romance began with Doctor Davis, who was also a student at that institution.—*Topeka Capital*, April 16.

Hazing, frats, the Faculty, interesting and amusing College incidents were the topics of discussion at the banquet of former students of the Kansas State Agricultural College last night. The banquet was held at the Chamber of Commerce and eighteen former students of the College attended. This was the first meeting of the students since organizing of a club. John L. Stingley, of the class of 1894, acted as toast-master. Mrs. J. C. Day, of the class of 1869, was the oldest person present. The others were members of classes of different years ranging as late as 1907, of which Miss Mary Louise Matthews and Miss Flora M. Hull were members. A six-course dinner was served. The persons who attended the banquet were Mrs. Jean (Day) Purdy, Miss Mary Louise Matthews, Miss Flora M. Hull, Miss Ruth E. Neiman, of Whitewater, Miss Jessie Holland, Miss Stella Hall, Mrs. J. C. Day, Miss Elizabeth J. Agnew, Miss Agnes Tear, of Cheney, Mrs. Jake Lewis, Messrs. John L. Stingley, Dr. R. Matthews, W. H. Purdy, W. J. Bryant, Max G. Spalding, Foster Day, and L. J. Johnson, of Garden Plain.—*Wichita Eagle*.



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History of the Experiment Station.

(Excerpted from Dr. J. D. Walters' History of the Kansas State Agricultural College.)

If there is any section of the country that needs the painstaking assistance of the scientific agriculturist and experimenter, it is the prairie and mountain region of the West, where a climate unlike that of the older part of the United States and the civilized countries of Europe makes the selection of new crop plants and the adoption of new methods of tilling and husbanding an imperative necessity. It is natural that this necessity should have presented itself with great force to the managers of an institution founded for the purpose of educating the youth of the State for the vocation of a farmer. Experimental work in a small way, especially in the important field of forest planting, was commenced as early as 1868, and was continued, as far as the limited means permitted, by Prof. E. Gale, who for many years was the president of the State Horticultural Society. In 1874, Professor Shelton commenced a series of very valuable experiments in the cultivation of alfalfa, cow-peas, and tame grasses, continuing his observations of varieties and species under different forms of treatment up to 1889. Later, experiments were made in subsoiling, listing, feeding, etc. The results were published in the *Industrialist* and in freely-distributed annual reports. Professor Popenoe, following his predecessors in the work of horticulture, made a series of experiments in arboriculture, grape growing, and vegetable gardening. This work was carried on chiefly at the expense of the College, though during the eighties the legislature reluctantly assisted with a few paltry appropriations. In 1888, however, the work gained a new phase by the help of the general government.

The passage by Congress of the "Hatch bill," in March, 1887, provided for the organization in each state of a station for experiments in lines promotive of agriculture. The legislature at once designated this College as the proper place for the station, and measures were taken for such work. It was found, however, that

no appropriation had been made for carrying out the provisions of the bill, and accordingly little could be done until February, 1888, at which time the appropriation was made.

The law, named after Senator Hatch, of Missouri, who was its framer and promoter, is as follows:

AN ACT to establish agricultural experiment stations in connection with the colleges established in the several states under the provisions of an act approved July 2, 1862, and of the acts supplementary thereto.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That in order to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under direction of the college or colleges, or agricultural department of colleges, in each state or territory established, or which may hereafter be established, in accordance with the provisions of an act approved July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts," or any of the supplements to said act, a department to be known and designated as an "Agricultural Experiment Station:" *Provided,* That in any state or territory in which two such colleges have been or may be so established, the appropriation hereinafter made to such state or territory shall be equally divided between such colleges, unless the legislature of such state or territory shall otherwise direct.

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural interests of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states or territories.

SEC. 3. That in order to secure, as far as practicable, uniformity of methods and results in the work of said stations, it shall be the duty of the United States commissioner of agriculture to furnish forms, as far as practicable, for the tabulation of results of investigation or experiments; to indicate from time to time such lines of inquiry as to him shall seem most important; and in general, to furnish such advice and assistance as will best promote the purposes of this act. It shall be the duty of each of said stations, annually, on or before the first day of February, to make to the governor of the state or territory in which it is located a full and detailed report of its operations, including a statement of receipts and expenditures, a copy of

which report shall be sent to each of said stations, to the commissioner of agriculture, and to the secretary of the treasury of the United States.

SEC. 4. That bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the states or territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports, and the annual reports of said stations, shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the postmaster-general may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expenses of conducting investigations and experiments, and printing and distributing the results hereinbefore prescribed, the sum of \$15,000 is hereby appropriated to each state, to be specially provided for by Congress in the appropriations from year to year, and to each territory entitled under the provisions of section 8 of this act, out of any money in the treasury proceeding from the sales of public lands, to be paid in equal quarterly payments on the first day of January, April, July and October in each year, to the treasurer or other officer duly appointed by the governing boards of said colleges to receive the same, the first payment to be made on the first day of October, 1887: *Provided, however,* That out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement or repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

SEC. 6. That whenever it shall appear to the secretary of the treasury, from the annual statement of receipts and expenditures of any of said stations, that a portion of the preceding annual appropriation remains unexpended, such amount shall be deducted from the next succeeding annual appropriation to such station, in order that the amount of money appropriated to any station shall not exceed the amount actually and necessarily required for its maintenance and support.

SEC. 7. That nothing in this act shall be construed to impair or modify the legal relation existing between any of the said colleges and the government of the states or territories in which they are respectively located.

SEC. 8. That in states having colleges entitled under this section to the benefits of this act, and having also agricultural experiment stations established by law separate from said colleges, such states shall be authorized to apply such benefits to experiments at stations so established by such states; and in case any state shall have established, under provisions of said act of July 2 aforesaid, an agricultural department or experimental station in connection with any university, college or institution not distinctively an agricultural college or school, and said states shall have established or shall hereafter establish a separate agricultural college or school, which shall have connected therewith an experimental farm or station, the legislature of such state may apply in whole or in part the appropriation by this act made to such agricultural college or school; and no legislature shall, by contract, express or implied, disable itself from so doing.

SEC. 9. That the grants of moneys authorized by this act are made subject to the legislative assent of the several states and territories to the purposes of said grants: *Provided,* That payments of such installments of the appropriation herein made as shall become due to any state before the ad-

jourment of the regular session of the legislature meeting next after the passage of this act shall be made upon the assent of the governor thereof, duly certified to the secretary of the treasury.

SEC. 10. Nothing in this act shall be held or construed as binding the United States to continue any payments from the treasury to any or all of the states or institutions mentioned in this act; but Congress may at any time amend, suspend or repeal any or all of the provisions of this act.

Approved March 1, 1887.

As soon as the news arrived that the President had signed the above bill, the State legislature passed the following concurrent resolution:

Be it resolved by the Senate of the State of Kansas, the House concurring, That the annual appropriation of fifteen thousand dollars (\$15,000), made available to the State of Kansas under the act of Congress for the maintenance of an experiment station for the benefit of agriculture, in connection with each college established under the act of Congress approved July 2, 1862, be and is hereby placed under the control of the Board of Regents of the Kansas State Agricultural College, subject to rules and regulations expressed or implied in the act of Congress above named.

Approved March 3, 1887.

These enactments placed \$15,000 in the hands of the Board of Regents for use during the year ending June 30, 1888, and an equal sum for the year following. The organization of the Experiment Station was at once completed and the work started. The general executive management of the Station was placed under the control of a council, consisting of the President, the professors of agriculture, horticulture and entomology, chemistry, botany, and veterinary science. Pres. Geo. T. Fairchild was made *ex-officio* chairman of the council, and Prof. E. M. Shelton director. The organic act permitted the use of one-fifth of the appropriation of the first year for building purposes. From this source the horticultural laboratory, with about twenty-four hundred square feet of propagating pits, was constructed.

Upon the resignation of Prof. E. M. Shelton, in January, 1890, the office of director was discontinued, and the clerical duties heretofore connected with that office given to the assistant secretary of the Board of Regents; but ten years later, in June, 1900, the Board of Regents went back to the original plan, reestablished the office of director, and elected Prof. J. T. Willard, of the Chemical Department, to the position. In 1901 the newly-created chair of dairy husbandry was added to the Station staff. The experimenting force of the College in 1902 consisted of eight professors and seven assistants.

In 1894 the College, heeding the general clamor for irrigation experiments, established an irrigation farm of about ten acres at

Garden City, but two years later, after spending several thousand dollars in irrigation operations, it was decided to abandon further investigations in that quarter. A similar effort was made near Goodland, with drive-well machinery. At Garden City the water was hoisted by means of a "Jumbo" wheel, and at Goodland by means of a vertical windmill. Prof. O. P. Hood, of the Engineering Department, believing that the irrigation problem was chiefly a question of effective pumps and cheap motive power, made a series of experiments with wind motors for the purpose of testing their working results in hoisting water, but, although much of this work was done in connection with the College Experiment Station, the report was ultimately published by the U. S. Department of Agriculture.

During the closing days of the winter session of Congress in 1895 a bill was passed giving the Agricultural College half of the reservation of the abandoned Fort Hays, in Trego county, a tract of over seventy-two hundred acres of fine prairie land, for the purpose of founding a branch experiment station. The remainder of the reservation was donated the State for locating a Normal School, while a small strip of land along the town site was to form a public park. President Cleveland vetoed the bill, as he had vetoed the "deficiency bill" mentioned elsewhere, but in the winter of 1900 it was again passed, being introduced and fathered by Senator W. A. Harris (appointed as Regent of the College in 1909) and Congressman W. A. Reeder. The act reads as follows:

Be it Enacted, That the abandoned Fort Hays reservation, and all improvements thereon, situated in the State of Kansas, be and the same is hereby granted to said State upon the conditions that said State shall establish and maintain perpetually thereon, first, an experimental station of the Kansas Agricultural College; second, a western branch of the Kansas State Normal School, and in that connection therewith the said reservation shall be used and maintained as a public park:

Provided, That said State shall, within five years from and after the passage of this act, accept this grant, and shall by proper legislative action establish on said reservation an experiment station of the Kansas Agricultural College and a western branch of the Kansas State Normal School, and whenever the land shall cease to be used by said State for the purposes herein mentioned the same shall revert to the United States.

Provided further, That the provisions of this act shall not apply to any tract or tracts within the limits of said reservation to which valid claim has attached by settlement or otherwise under any public-land laws of the United States.

A few days after the passage of this act, the State legislature, then also in session, accepted the proffered grant and obligated itself to carry out its liberal conditions. The following is a copy

of the act as far as it relates to the organization of the Experiment Station, sections 4, 5, 6, 7 and 8 relating to the establishment of the Branch Normal School being omitted:

SECTION 1. The Boards of Regents of the State Agricultural College and of the State Normal School, respectively, are hereby authorized to locate and establish an experimental station of the State Agricultural College and a branch or auxiliary of the State Normal School on the Fort Hays military reservation.

SEC. 2. The following described tracts of land lying within the limits of the reservation aforesaid, to wit: Section 36, township 13 S., range 19 W.; section 31, township 13 S., range 18 W.; section 1, township 14 S., range 19 W.; sections 6 and 8, the east half of section 7, the north half of section 17, and the northeast quarter of section 18, all in township 14 S., range 18 W., are hereby placed under the direction of the Regents of the State Normal School. It shall be their duty to lease or rent the said lands to the best advantage, and all moneys derived from rents for such lands shall be collected by the Regents aforesaid, who shall deposit the same with the treasurer of the Board, to be expended by said Board of Regents for the equipment and maintenance of said auxiliary of the State Normal School.

SEC. 3. All the remaining lands of the reservation aforesaid are hereby placed under the direction of the Board of Regents of the State Agricultural College, except the north half of section 5, township 14 S., range 18 W., which, with the buildings thereon, shall be used jointly as may be determined by the Boards of Regents of the institutions aforesaid.

SEC. 9. The Board of Regents of the State Agricultural College is hereby authorized to locate and establish on the reservation aforesaid an experimental station of the Agricultural College, and shall adopt such measures as may be necessary to place the same in successful operation and to preserve the land, upon which the native timber is now growing, as a public park.

SEC. 10. To carry out the provisions of section 9 of this act, the sum of three thousand dollars is hereby appropriated for the fiscal year ending June 30, 1902, and three thousand dollars for the fiscal year ending June 30, 1903.

SEC. 11. All sums of money payable out of the appropriations specified in section 8 of this act shall be upon vouchers approved by the Board of Regents of the State Normal School; all sums payable out of the appropriations specified in section 10 shall be upon vouchers approved by the Board of Regents of the State Agricultural College.

SEC. 12. The auditor of State is hereby authorized to draw his warrants on the treasurer of State for the several sums and purposes specified in this act upon verified vouchers approved by the Board of Regents of the State Normal School or the State Agricultural College: *Provided*, That no portion of the money appropriated in this act shall be expended by the Boards of Regents until the attorney-general of the State of Kansas shall first notify the governor and the Board of Regents that the title to the land in said reservation is unimpaired, and the land is available under the terms of the act of Congress ceding said reservation to the State.

SEC. 13. This act shall take effect and be in force from and after its publication in the official State paper.

Approved February 26, 1901.

Published in official State paper March 1, 1901.

The House joint resolution No. 1, accepting the abandoned Fort Hays military reservation, reads as follows:

Be it resolved by the Legislature of the State of Kansas:

SECTION 1. That the State of Kansas hereby accepts from the United States the abandoned Fort Hays military reservation, as provided in act of Congress relating thereto, approved March 27, 1900.

SEC. 2. That the provisions of the act of Congress, "An act granting to the State of Kansas the abandoned Fort Hays military reservation, in said State, for the purpose of establishing an experimental station of the Kansas Agricultural College and a western branch of the Kansas State Normal School thereon and a public park," approved March 27, 1900, are hereby accepted by the State of Kansas.

SEC. 3. That upon the approval of this act by the governor, he is requested to transmit a certified copy of the same to the secretary of the interior of the United States.

Approved February 7, 1901.

Copy transmitted to secretary of the interior February 7, 1901.

(To be continued.)

Teaching Teachers to Cook.

The summer term of Domestic Science and Art begins on Tuesday, May 18, 1909, and already inquiries are coming from teachers in several states in regard to the work. This course was instituted to meet the needs of teachers now engaged in public schools, the date of opening being after many schools have closed.

The general plan of the work is to give the student as complete knowledge of the subjects as can be crowded into the ten weeks, not neglecting consideration of methods of presenting the subject to public-school children. Foods are studied as to their source, production, chemical composition, the effects of heat, methods of preparation, and digestibility. The work is divided between lectures and recitations and actual laboratory work—the doing of the things talked about.

In the sewing, practical knowledge of all varieties of hand and machine sewing is given, patterns drafted, and garments made.

Completion of one summer's work entitles the student to a one-year certificate to teach domestic science and art in the State. A great many schools are anxious to introduce some elementary work in cooking and sewing, without elaborate equipment and without special teachers. There are capable teachers of mature years and experience who can in this short term get a very comprehensive grasp of what may be taught in cooking and sewing in a limited time and with limited equipment.

Heretofore many of the regular students in the College have carried some of this work, but hereafter, on account of a rear-

rangement of the courses, very few will do this. Then it will give to the teachers who come for this summer course the undivided time and attention of the instructors assigned to the work. It is very important that all students who wish this course plan to enter on the opening day, if possible.

Maintaining the Quality and Purity of Seed-Wheat.

During the last four years the Kansas Experiment Station has distributed some eight thousand bushels of well-bred, hard red winter wheat of the best producing varieties. Among these are the Kharkof, Malakoff, Improved Turkey, etc. This wheat has been redistributed by the farmers and sown in larger areas, and fields of it are now growing in practically every county of the State, the total acreage aggregating some 200,000 acres. The tests at the Station and reports from farmers prove that this wheat is of greater yielding capacity and hardier and purer and of better quality than the wheat generally grown, hence it is important that the farmers who are growing this wheat take great care in keeping the wheat pure in order to continue the distribution of this improved seed-wheat, and at the same time maintain the yield and quality of the wheat grown on their own farms.

There are several factors which cause a deterioration of wheat, and one of the principal of these is the mixture or crossing of wheat of different strains or varieties. The improved wheat which has been distributed by the State Experiment Station is not absolutely pure in variety or type, but these varieties are much purer than the average wheat of the country, and this purity must be maintained if the good qualities of this wheat are to continue. One of the principal sources of mixing is from volunteer wheat which occurs when fields are reseeded to wheat year after year. In order to keep the wheat pure and of good quality, the crop for seed should always be grown in a field free from volunteer wheat. This necessitates rotation, preceding the wheat with some other crop, such as oats, barley, or corn, and in order that the fertility of the soil be maintained by such rotation the legumes and grasses should be included. If it is necessary to sow wheat after wheat, great care should be taken to destroy the volunteer growth as far as possible by early plowing and frequent cultivation before seeding, or by disking immediately after harvest in order to start the volunteer wheat, which may be destroyed later by plowing.

Again, wheat may become mixed in the harvesting or shocking. This is especially apt to occur when the farmer is introducing the

wheat, planting it, usually, in small areas. Care should be taken to plant the pure seed in a separate field, or if the wheat is planted in a field with other wheat, a narrow alley should be left between varieties so they may be harvested separately. Wheat does not cross-fertilize like corn or sorghum, and the varieties may be planted near each other without mixing except through carelessness in harvesting. There is some danger, however, that when two varieties of wheat are planted thus in the same field that mixing may occur by heavy rains washing the seed of one part of the field to the other. Also a heavy wind may blow seed of one variety from one field to another.

Another common source of mixing is in threshing. If two or more varieties of wheat are grown on the same farm, it is advisable to thresh some other grain after threshing one variety of wheat; or if no other small grain is grown on the farm, great care should be taken to clean out the separator before threshing the pure wheat, and then it would be well to send the first load or two of the pure seed to market rather than to save it for sowing. The same care should be taken when the separator is hauled from one farm to another, not only to prevent mixing varieties of wheat, but also to prevent the spread of smut from one farm to another through inoculating the seed wheat from the threshing-machine that has previously threshed smutty wheat.

The farmer is not apt to mix varieties by careless storing, since he will have only one improved variety, and this he will easily keep separate from the common crop. Most farmers are rather too careless in not carefully cleaning the fanning-mill when changing from one variety of wheat to another. It hardly seems necessary to mention the importance of carefully sweeping out bins and cleaning all sacks into which this pure wheat is to be stored.

To produce the best seed, the wheat should be well graded and only the heaviest and plumpest kernels sown. The seed grain should be graded and fanned to remove weed seeds, if for no other reason. Again, it is usually necessary to fan grain simply to remove dirt, chaff and pieces of stems that would greatly interfere with the uniform distribution of the seed in planting. Also, the inferior plant produced from inferior seeds may act as weeds, especially in dry seasons or on land low in fertility, actually taking the moisture and the plant food from the larger and better developed plants, thus reducing the yield and injuring the quality of the grain produced.

Harvest the wheat when it is just fully matured. Immature seed is apt to be shrunken and deficient in vitality. On the other

hand, as soon as the wheat is over-ripe it begins to deteriorate in quality and may lose some of its vitality. Do not allow seed-wheat to become damaged by rain. Shock well immediately and thresh from the field as soon as the grain is dry, or put the wheat into stacks or barns for protection. Perhaps more wheat is injured in quality after harvest by unfavorable weather and from carelessness in handling than from any other source. The stacks should be well built to protect from the rain, and after the wheat is put into the stack or barn it should be left for several weeks until after it has passed through the sweat before it is threshed. Whether to cap shocks or to leave them uncapped is the question. Unless wheat is well set up and carefully capped the caps are apt to blow off and the shocks are then more exposed than if the bundles were originally set in open shocks. I prefer, however, to carefully shock and cap rather than to set in long shocks or round shocks without caps. It may be necessary to go over the field occasionally after a wind in order to replace caps that have blown off. Do not make the shocks too large. Ten or twelve bundles set up with a single cap carefully broken and spread is better than a large shock with two or three caps.

If wheat farmers will practice the plan of growing and saving seed-wheat as suggested above, the average yield of wheat may be increased several bushels per acre and the quality and purity of the grain may be improved. There will be a greater demand this summer for improved seed-wheat than ever before, and it is important that the farmers who are now growing pure wheat may keep it pure. The farmer who grows any wheat will find it profitable to deliver that wheat in marketable condition.

A. M. TEN EYCK.

The preliminary track meet at the City Park last Saturday afternoon was very satisfactory. Following is a summary of the meet. One-hundred-yard dash, Christian, Musser, and Pyles; 220-yard dash, Christian, 24 1-5 seconds, Musser, Gates; quarter-mile, Foster, 56 4-5 seconds; half-mile, Detwiler, 2 minutes 15 2-5 seconds, Roth; mile run, Austin, 5 minutes, 2 seconds, Phenix, Norby; 2-mile run, Austin, 11 minutes, 10 3-5 seconds; pole vault, Ross, 9 feet, 3 inches, Bushey, Warren; high jump, Pyles and Neiman, 5 feet, Sterling, Ferris, and Mitchell, 4 feet, 8 inches; broad jump, Pyles, 18 feet, 3 inches, Mitchell, Goldsmith; high hurdle, Fowler, Foster, and Bushey; low hurdle, Foster, Pyles, and Fowler; shot put, Heslip, Edwards, and Hole; hammer-throw, Edwards, Heslip, and Hole; discus, Edwards, Hole, and Heslip.

Local Notes.

The mid-term examinations will be held Saturday, May 8.

Several upper-class students are contemplating a trip through Europe on bicycles.

The Military Department gives a public dress parade on the campus every Friday afternoon.

The contractors have commenced work on the cement curbing of the western part of Osage street.

President Nichols has sent the first installment of the annual catalogue to the State printing-office.

The College team defeated the Salina Wesleyans at the Athletic Park last Monday afternoon by a score of 6 to 5.

President Nichols attended the April meeting of the State Board of Education, at Topeka, last Monday and Tuesday.

The game between this College and Lindsborg last Monday resulted in an easy victory for our boys. The score was 8 to 0.

Next Tuesday, May 4, there will be a warm game in the Manhattan Athletic Park, between this College and Fairmount College.

The Manhattan Chautauqua will probably be held in the City Park this summer. The date has not been definitely fixed, as yet.

The College team played a very successful game with the Oklahoma Farmers last Wednesday afternoon in the Manhattan Athletic Park. The score stood 6 to 2.

To-day, Saturday, the track team of the College goes to Baldwin to meet the Baker Methodists. From there they will go to Lawrence to contest with the Jayhawkers.

Professor Kendall went to Lincoln, Neb., last week with a view to purchasing dairy stock. While there he visited the Agricultural College, which is located near the city.

The Dairy Department is removing the raised earth approach south of Dairy Hall and is filling up the ground north of the building—an improvement that will greatly improve the looks of that part of the campus.

The Horticultural Department has leveled the grounds about the new Domestic Science and Art Hall and has seeded it to blue-grass. A large number of flowering bushes have also been planted. In another month or two this part of the campus will look as well as the older parts.

The annual play of the College Dramatic Club in the Auditorium last Monday night was a complete success, though the play "The Lady of Lyons," by Lord Lytton, is a little heavy for actors of College calibre. The "Lady" part was played by Miss Hope Palmer, the part of Claude Melnotte by George Thatcher, the part of Colonel Damas by Raymond Ramage, and the part of the widow Melnotte by Wilma Evans. All did well. The cast was trained by Miss Elinor Lincoln.

Coach Ahearn, of Manhattan, is one of the most successful coaches in the West. He turns out strong football and baseball teams each year. Besides coaching athletics, he is an instructor in the Horticultural Department.—*Ottawa Campus*.

Gov. James K. Vardaman, of Mississippi, will fill the last date of the College lecture course, made vacant by Governor Johnson's non-appearance. The lecture will be given early in May. He will probably discuss the negro problem, on which he has very strong southern convictions.

The April *Alumnus* contains a thirteen-page article on "Some Aspects of Country Life in Europe," by Prof. Herbert F. Roberts, of this College. Mr. and Mrs. Roberts made a summer tour through southern and central Europe last year and the article relates many interesting details of their observations. The writer of this item is a European himself and knows of the peculiar peasant life by personal observation. Professor Roberts has observed keenly and correctly and has presented his experiences in a very interesting and readable form.

Alumni and Former Students.

Ethel Berry, '07, will do institute work in Oklahoma the coming summer.—*Alumnus*.

Rev. F. O. Woestemeyer, '99, and wife are happy in the birth of a son, April 23, Rossville, Kan.

Jessie Ballou, '05, is now employed as a stenographer in the Girls' Industrial School, at Beloit, Kan.

H. B. Holroyd, '03, has been promoted to the office of assistant chief of products in the Division of Products, Bureau of Forestry, with headquarters at Denver, Colo.—*Alumnus*.

Roy Graves, '09, who finished his course at the close of the winter term, entered, April 1, upon his duties as superintendent of the Kansas City Pure Milk Commission.—*Alumnus*.

Josephine (Wilder) McCullough, '98, of Delavan, Kan., with her two little sons, is visiting with her parents for a few weeks, and this week her sister, Mrs. W. M. Sawdon, '98, arrived from Ithaca, N. Y., with her four little daughters, for a visit here.

Jennie (Edelblute) Smethurst, '00, and her husband, who have been in charge of the W. F. Roehr music store in Manhattan for the past four years, will hereafter manage their own music store, which they opened two weeks ago in the new Hopper building on Poyntz Avenue.—*Alumnus*.

Henry Brinkman, '07, writes to Professor Walters from Emporia that he has plenty of work for himself and considerable of an office force. He is planning at present two large brick school-houses, a four-room frame school-house, a church, and several residences. Brinkman is a young architect with a bright future before him.

Miss Clemons requests information concerning the present post-office addresses of the following persons, respectively: Chas. W. Earle, '90; Lisle Pursel, '96; Ross Newland and T. F. White, '06; Adeline Poston, '07.

Jennie Cottrell, '04, and Edward Victor Nelson, former student, were married at the residence of the bride's mother, near Wabaunsee, April 7, 1909. Mr. and Mrs. Nelson have bought a farm near Riley, where they are now living.

Lizzie (Clarke) Helmick, sophomore student in 1884, visited her cousin, Mrs. Lydia (Gardiner) Willard, last week and marveled at the changes that a quarter of a century have brought to persons and places here. Her husband, Capt. E. A. Helmick, is now on detail at Fort Leavenworth, where he is attending the school for officers. Maude (Gardiner) Obrecht, '93, also visited with her sister, Mrs. Willard, at the same time.

Veterinarian John Oesterhaus ['01], Seventh Cavalry, who for the past year has been stationed at Fort Riley, has resigned from the army, his resignation to take effect on June 3. Mr. Oesterhaus will receive a good position with the Bureau of Animal Industry and will take up his work this fall. He left to-day for the West, where he will spend a short time and will then go to the East, where he will visit for several months. Mr. Oesterhaus is a graduate of the American Veterinary College of Kansas City, Mo., and the Kansas State Agricultural College at Manhattan.—*Junction City Union*.

J. R. Callahan, junior student in 1890, with his bride of a few months, visited the College on the 29th for the first time since his student life. He found scarcely any one whom he knew, and the grounds and buildings and the city have become almost unrecognizable. He is now on the staff of the United States Army, holding the position of commissary sergeant in the subsistence department, and has been detailed for duty at West Point for several years past. He has stored in memory much information concerning the pranks of the students and characteristics of the members of the Faculty of twenty years ago.

Special to the *Capital* from Madison, Wis., April 23: "A Kansas-born and educated woman, Miss Abby L. Marlatt [1888], has been selected as head of the State University school of home economics as the result of an entire reorganization of the department, which has not been operated sufficiently close to modern standards. Miss Marlatt comes from Manhattan and was graduated at the Kansas Agricultural College. There she took special work in home building and from Kansas went to Brown University, where she became imbued with the eastern idea of the proper manner of teaching home economics. She therefore represents the best thought of the West and of the East as well. She is given full scope to do as she pleases in reorganizing the Wisconsin department and is expected to make special effort to introduce university methods into the county training school and correspondence courses.

Board of Instruction (concluded).

Miss Ada Rice, B.S. (K. S. A. C.)	Instructor in English
Miss Ella Weeks, A.B. (U. of K.)	Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount)	Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University)	Instructor in Veterinary Science
Miss Ula M. Dow, B.S. (K. S. A. C.)	Instructor in Domestic Science
Theo. H. Scheffer, A.M. (Cornell University)	Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College)	Instructor in Chemistry
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# THE INDUSTRIALIST

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## ***Treating Seed-Corn to Protect it from Burrowing Animals.***

At this season of the year a great many inquiries are being received at the Station concerning methods of so treating seed-corn as to prevent its being taken in the ground by moles and other burrowing animals. It is partly to supply timely information on the subject and partly to secure the coöperation of farmers in trying out some of the more promising methods of procedure that this preliminary bulletin is published. It is only fair to state at the outset, however, that plans and methods with us are still following experimental lines, and that no final recommendations can yet be made.

That the mole is directly responsible for few if any of the numerous and varied depredations laid to his charge, our research the past year has proven conclusively. The mole is a predaceous animal, living chiefly on insects, insect larvæ (particularly white grubs), and earthworms. This conclusion is based on the careful analysis of the stomach contents of over one hundred fifty specimens taken in all months of the year. Three or four species of field mice and the common house mouse habitually frequent the runways which range over the mole's hunting-grounds, and feed on the grains and seeds planted by man and by nature. If one will take the pains to set a few small mouse traps, properly baited, in shallow excavations scooped out in the surface burrows of field and garden, he can do a little detective work on his own account. The excavation containing the trap should be covered by a board or piece of sod.

Experiments in methods of preventing the theft of seed grain in the ground have all followed one of three lines—baiting the pests some days in advance of planting, regular planting of poisoned seed, and surface coating of seed with ill-flavored substances.

*Poisoned Bait.*—By baiting we mean the introduction of poisoned grain baits into the mole runways through small opening made with a stick. This is the plan that succeeds best with pocket-



gophers, for it places the bait where it is sure to be found. The location of the mole's runways is readily indicated by the surface ridging of the earth, especially after a rain. The sharp stick used for making the openings through the roof into the burrow should be no larger than one's finger. Close this opening with a clod after dropping in the kernels of poisoned grain. Either corn or wheat treated with the poisoned syrup used for destroying pocket-gophers will make efficient baits. Ordinary white arsenic may also be used by first wetting the corn with water in which a little gum arabic has been dissolved and then dusting the arsenic over the grain and stirring it thoroughly. If this plan is followed the grain may be allowed to dry before using. The bait may be put out with a hand planter, if the grain has been poisoned by some substance that does not render it sticky. To prepare a bait that will work in a planter, dissolve one-eighth of an ounce of strychnia sulphate in two quarts of hot water, preferably rain water. Soak the corn in this for 48 hours and then spread it out and dry thoroughly.

*Poisoned Seed.*—A limited number of experiments recently performed seem to indicate that the treatment last mentioned does not in the least injure the germinating powers of the corn, and that seed so treated could be used for the regular planting. We cannot recommend the method, however, until we have given it more thorough test under varying conditions. It is one of our most promising solutions of the problem, and we hope that interested farmers will coöperate with us in making trials of the method on a small scale and report results in detail. Of course, if grain for the regular seeding can be so treated, baiting with poisoned grains will be unnecessary. In testing the method, do not put the corn to soak until the water has cooled and use only so much grain as, after allowing for swelling, will be completely covered by the water; otherwise the kernels that are above water will germinate and the germ will kill on drying.

*Coating Seed With Offensive Substances.*—The past season we made an extensive series of tests in treating seed-corn with various ill-tasting substances calculated to deter burrowing animals from taking it. The results in most cases were negative—that is, the seed was taken about as readily as though it had not been treated at all. Some of the methods of treatment originated with us, others were recommended. In every case a counted number of kernels of treated corn were put out in not less than twenty different locations and the trial repeated one or more times during

the season. All locations were accurately marked and carefully examined at regular intervals. Our notes show that none of the substances used prevented the kernels of corn, or a portion of them, from being eaten or carried off. In most cases the grain was introduced directly into surface runways through an opening made by a lead-pencil or small stick. We had no opportunity to test these substances with crows or spermophiles (striped gophers or ground squirrels). The results of these tests are here briefly summarized:

*Substances Which Have Been Found to Injure the Germ of the Seed.*

—Kerosene, crude petroleum, copperas, crude carbolic acid, fish oil, and spirits of camphor, when used in sufficient quantity or strength to impart an odor to the corn, seriously injure the germinating powers of the grain. To treat the seed with any of these substances in such small quantity or dilute form as not to injure the germ is a waste of time, for the slight taste or odor imparted is soon dissipated in contact with the soil.

*Substances not Injurious to the Seed but of no Value or not Available.*

—Mixing pulverized gum camphor with the dry grain and storing it in a closed vessel for some days has been recommended as an efficient treatment. With us the results were entirely negative. Little or no odor was imparted to the grain. Pine tar was used in our experiments. It has a strong odor, but leaves the grain too sticky to work in a planter.

*Substances which Promise Success and Merit Further Trial.*—Coal-tar makes an ideal coating of a rich brown color and a persistent gassy smell. It dries nicely, is not in the least sticky, and will work well in a planter. Wet the grain with a little warm water before stirring in the tar. A teaspoonful of the latter will be sufficient for a peck of corn. The mass must be thoroughly mixed and then dried before attempting to plant. Soaking corn in strong tobacco decoction for a few hours, or simply wetting it with the liquid, seems to promise good results. Of course, the grain must be thoroughly dried before planting. It will have a strong odor and will not be sticky.

Again we express the hope that all who are interested in the matter of treating seed-corn will coöperate with us in making tests under the varying conditions that different localities, different methods, different soils, different animals and differing weather will present. Later we confidently expect to be able to offer more definite and certain recommendations and suggestions.

THEO. H. SCHEFFER.



### *Poultry Records.*

Last month some records were sent out from the Poultry Department of the College which proved to be very interesting to many people. This month we have a still better record to send out.

During the month of April we again found two pullets which condescended to produce two eggs in one day. Both of these pullets were S. C. W. Leghorns.

There are 129 pullets of the S. C. W. Leghorns and White Plymouth Rock varieties which are in feeding and breeding experiments and which are trap nested. Of these 129, 97 are fed only wheat and corn or oats, and beef scrap or casein, no range whatever being allowed. The remaining birds are fed a ration consisting of many feeds, supposedly approaching and ideal, but are allowed no range. These 129 pullets produced during the month of April 2118 eggs. Fifty-four laid over 20 eggs each, so it is very clear that some of the pullets were drones. One pen of S. C. W. Leghorn pullets laid 410 eggs, and 12 White Plymouth Rocks produced 241, which shows that each pen averaged over 20 eggs per pullet.

In the Plymouth Rock pen we find one pullet has laid 41 consecutive days, and up to date is still laying. She has laid 79 eggs in 91 days, and 30 during the month of April. In this same pen we find 4 pullets which laid between 60 and 71 eggs in 88 days. Last month two of them shelled out 25 eggs, and one produced 26 of them. For the three months that trap-nest records have been kept, these 12 produced 671 eggs, or an average of 55.9 eggs apiece. These pullets began laying in November and were in full laying in January, so we think their present record is remarkable. Their income from eggs in the three months, with eggs selling at market price, was \$11.69. The cost of feed was \$4.25, all of which was purchased at the prevailing high prices.

The 20 S. C. W. Leghorns which are doing so splendidly laid 1038 eggs during the last three months, or an average of 51.6 eggs per bird. It cost for feed \$5.68 to produce these eggs, which sold on the market for \$18.07. It will be seen from this that it costs less to produce eggs from Leghorns than it does from Plymouth Rocks. However, the Plymouth Rock pullets would bring more per head on the market than the Leghorns.

These two pens which are doing so well were selected to fill the supposed type of egg-producing fowls, with the long back and wedge shape. No attention was paid to fancy points.

Another record which we consider as excellent is that 45 three-

year-old White Leghorn hens produced 785 eggs in April. These are simply commonplace Leghorns which have been in feeding experiments for two years and were used as breeders this Spring. They have never been outside of a small bare lot since they were five months old. However, they were fed right. One man liked this flock so well that he offered \$35 for the 45 old hens on June first.

We have received letters during the past month from poultry enthusiasts who claim they have one or two hens which lay well. We find this to be often true, but how many poultrymen can show as good an average as the above? If there is any man who possesses a chicken which has laid more consecutive days than the White Plymouth Rock pullet No. 129, we would like to hear from him.

A. G. PHILIPS.

### ***History of the Experiment Station.***

(Excerpted from Dr. J. D. Walters' History of the Kansas State Agricultural College.)

(Continued from preceding issue.)

The Hays Experiment Station has witnessed a wonderful transformation the past eight years. Where a few years ago, less than a generation ago, the soldier, the cowboy, the Indian and the prairie-dog were prowling over the seemingly endless short-grass prairies, there are now miles of smooth roads passing through well-tilled plats of waving grain, emerald alfalfa, bearing orchards, promising nurseries, and successful forest plantations. It used to be one of the toughest rendezvous of the unspeakably rough Kansas frontier—it is to-day a beautiful, sunny landscape of peace and good will.

A visit to the Station recalls to the old Kansan much that happened there in the days of Wild Bill and Wyoming Pete.

Fort Hays was a general outfitting point for the Indian campaigns that vexed Western Kansas from 1867 to 1878. At different times it was commanded by army officers of more than national fame. Sheridan, Hancock, Custer, Smith, Miles, Carr, Howard, and others of lesser note, were stationed there, and among the great scouts and noted characters of the plains there is scarcely one who at some time was not a sojourner at the post or town. It was from here that General Custer started his campaign after Blackkettle, and from here that General Forsythe gathered the most of his intrepid volunteers who fought the battle of the Arickaree—that most remarkable engagement recorded in the annals of Indian war.

The flag was first thrown to the breeze at Fort Hays on July 4,



1867. But interesting as the history of old Fort Hays may be, far more interesting is the history of the town which sprang up across the creek. Originally the town was known as Rome, or at least when Hays was started there was a little settlement known by that name near by, and it gave way to the new railroad town which took the name of the fort. Rome was pioneered by W. F. Cody, better known as Buffalo Bill, and Buffalo Bill got his name at Hays or thereabouts because of his skill and industry in hunting the bison. In 1868, Bill took from Hill P. Wilson, then post trader at the fort, and later assistant secretary of state, a contract for supplying the soldiers with buffalo meat in lieu of beef, and he was a familiar figure about the post and town for a long time.

Naturally, the town of Hays, being the jumping off place for civilization, became the rendezvous for many of those wild characters who are wont to congregate on the frontier. "Wild Bill" (William Hickok), whom the writer of this history knew personally for several years, was elected sheriff of the county in 1868, but he did not serve out his term. He was chased out of the country by Lieut. Tom Custer, brother of the general, and a company of the Seventh Cavalry. Custer had ridden his horse into a billiard room one night, and then killed the horse because he would not jump on a billiard table. For this Bill arrested him and had him fined, and a few days later something like a dozen of Custer's troopers jumped on Bill in revenge. They cut him up some, but he killed two of them and wounded a couple of others, and they fled. That night, however, a whole company with their carbines and sidearms came to town in search of Bill, and he rode away in the darkness with the philosophical remark that he couldn't lick the whole Seventh Cavalry.

Besides the two soldiers who were buried at the fort, Bill added four graves to the town cemetery, which to this day is known as "Boot Hill." There were seventy-nine graves in this plot, and every one was occupied by a man who came to his death through violence, with the single exception of one, filled by a colored woman known as "Mrs. Kidd." Mrs. Kidd froze to death one night, and she was the only one in that grim burial plot whose form had not been marred by the gun, the knife, or the rope.

"Hank" Montgomery, who used to publish a paper at Hays and later became editor of the *Kansas City Journal*, said in an article in that paper, from which some of these early reminiscences are excerpted, that there is no authentic record of the "killings" made in Hays in the early days. Judge Jimmy Joyce, of Hays, once

published the statement that he had traced up 165 violent deaths in the town or its immediate surroundings. Of these he placed the number killed by Indians at only eighteen, while all the rest were stabbed or shot or hung. Judge Joyce himself was a noted western character. At the organization of the county he had been appointed justice of the peace, and he continued to hold the office for a number of years. Many of his decisions are famous. He allowed no appeals from his court. He granted divorces and performed other functions not lodged in the office which he held. He finally set out to usurp the functions of United States district judge, and then came to grief, and also to Leavenworth, where his friends had some difficulty in releasing him from the pen.

Mr. Montgomery used to tell the following characteristic "western" story on Judge Joyce:

"In 1870 the contractors' firm of Comstock & White were doing business at the fort. In the course of a quarrel Comstock killed White. White had a brother in New York, a lawyer, who came out to visit the law upon his brother's slayer. Comstock was arrested and brought before Judge Joyce at Hays City. The prisoner walked into the court room (Judge Joyce's saloon) with two big six-shooters belted to his hips.

"'Misther Comstock, ye are charged with wilful murther. Are ye guilty or not guilty?' asked the judge.

"'Guilty!' was the laconic response.

"This was entirely beyond Judge Joyce's calculations. He had no precedent for such a case, and no power or inclination to visit a penalty, and so, with great indignation, he shouted:

"'Ye are a fool for tellin' it! Did any wan see ye do it?'

"'No,' was the prisoner's response.

"'Thin Oi discharge ye fer want of ividence!' declared his honor. Imagine the feelings of Mr. White, of New York, who had come to avenge his brother's slaying!"

But that civilization was swept away by the advent of the U. P. railroad, the plow, and the shorthorn steer. The buildings of the old fort are nearly all demolished, and the city of Hays is one of the jewels of the Kansas prairie country. The six shooter of the cowboy has given way to the microscope of the college professor.

#### PROGRESS AT HAYS STATION.

At one time the reservation was supposed to be open for settlement, and much of the land was filed upon and occupied. When the State accepted the reservation these claims constituted a flaw in the title. To remove this, the Board executed leases to the



claimants running from three to five years, in consideration of which all further claim was relinquished.

The plans for managing the branch station are shown in the following resolutions, adopted by the Board December 13, 1901:

*Resolved*, That the president of the Board of Regents shall appoint a Regent, who shall, under the direction of the Board, have special charge of all matters pertaining to the Fort Hays reservation in behalf of the Agricultural College, the Experiment Station Council to direct all experiments, subject to the approval of the Board.

*Resolved*, That the crop experiments and such other experiments as can be provided for be begun in the year 1902 on as liberal a scale as circumstances and the funds at our command permit; and that all seeding, cultivation, harvesting, storing, sale and purchase of commodities, or of live stock and its feeding, pertaining to experimental work, and all records in reference thereto, be under the immediate supervision and direction of a competent man, who shall be stationed at Hays so much of the time as may be necessary for best doing the work contemplated.

*Resolved*, That such repairs be made upon the buildings on the Fort Hays reservation as shall make them available for use, and that a practical farmer be employed, who shall be known as foreman of the farm, and who shall see that all contracts pertaining thereto are fulfilled and all property belonging to the Experiment Station be properly cared for, and shall perform such other duties as shall be assigned to him.

*Resolved*, That the Regent appointed to have charge of the interests of the Experiment Station at Hays shall be paid his per diem and actual and necessary expenses incurred in the performance of such duties, but shall not be allowed mileage.

J. G. Haney, a graduate of the College, for several years assistant in field and feeding experiments and later agricultural agent of the Chihuahua & Pacific Railway Company, was appointed superintendent of the branch station. He entered upon his duties March 29, 1902, as soon as the title to the reservation was reported clear by the attorney-general, and such experiments as could be made on sod were started at once.

The part of the reservation secured by the Agricultural College was the one to the east, which has the greater diversity of location, quality, etc. The land proved to be of good quality, and, with the exception of the immediate bed of the creek, is all tillable.

At the time work was begun there were no improvements nor equipment of any kind on the land. The fort had been abandoned more than fifteen years; fully half of the buildings were gone entirely, and what remained were in a very dilapidated condition. The appropriation available was used in breaking out nearly a section of land, building seven miles of fence to close the numerous roads that radiated from Hays on the south side, and also in the purchase of some necessary implements and a saddle pony.

After the 1902-'03 appropriation was available four buildings were moved from the site of the old fort about a half-mile southeast to the location chosen for the Station buildings. These were fitted up for a barn, tool-shed, granary, and dwelling. In the fall of 1902 one team was bought for use on the Station. All team work had been hired up to this time, and it was still necessary to engage considerable help in gathering the feed grown on sod and put in 200 acres of wheat.

The legislature of 1903 was liberal in appropriations. A total of \$32,550 was obtained from the State for the succeeding two years, \$10,000 being made available on adjournment of the legislature for current expenses, teams, and equipment. With this fund the Station fenced about eight hundred acres of farm and prairie land, erected a number of sheds, a barn, and a boarding-house, dug a well, and bought an additional team and a lot of implements.

(To be continued.)

### ***The Agricultural College as an Englishman Sees It.***

An English newspaper correspondent who signs his name simply K. W. visited College a month ago. Following are a few excerpts from his Manhattan letter, published in *Northern News*, Kendal, England:

There was only one man in the hall of the bright and airy Manhattan hotel, and he sat in a rocking-chair smoking a cigar. After turning my back on him a couple of times I found he was the host, a personage in Western hotels not to be distinguished in any way from his pleasantest visitors. When I explained that I wanted to visit the State Agricultural College he telephoned to a livery-stable and soon a neat buggy drawn by a spirited little horse stood waiting outside. "There it is," he said. I went out and took my seat on the left. The hotel keeper followed, unhitched the horse and put the reins in my hands without even asking if I could drive. I realized the situation—and I think he did also—and drove off alone feeling that at last I was really "Out West," where a stranger is trusted with a horse for the asking.

The Kansas State Agricultural College stands like another town on a hill above Manhattan. It consists of a dozen handsome stone buildings and an estate of about 600 acres, all devoted to agricultural experiment. The institution receives about one-fifth of its funds from national grants. The State of Kansas provides the rest, and the figures are worth quoting if only to show to what



an extent the people are interested in the future of the State. Last year the College received as follows:

|                              |          |         |
|------------------------------|----------|---------|
| National appropriations..... | \$59,000 | £11,800 |
| State appropriations.....    | 249,000  | 49,800  |

For the year to come the Board of Regents is asking for something over \$500,000, or £100,000.

Pres. E. R. Nichols was pointed out to me by two young janitors carrying a big basket of sweepings between them. One of the first things I learned from the President, a man of great personal charm and general culture, was that these were two of the students who are partly self-supporting. "The College pays out every month about \$1800 (£360) for work done by the students," he told me. "This work is on the farm, in the orchards and gardens, in the shops and printing-office, for janitors, and so on. They are paid at the rate of twelve and one-half cents (six pence) an hour. Students who have shown ability and trustworthiness obtain more responsible and more remunerative work. Of course those who are earning their way through College do not have much time for the lighter pleasures of College life, but with that exception I never saw any indication of difference in the social position of those students who have to earn something and those who do not need to. Living is moderate in Manhattan. Our numbers are increasing at the rate of 200 a year."

"Is the course exclusively agricultural?" I asked him.

"No; our students, young men and women, are about equally divided between agriculture, engineering, and domestic science (cooking, sewing and other housekeeping work). And every student divides his or her time between three general courses: cultural, that is 'culture' in the old-fashioned meaning of the word, basic science, and vocational."

"Are most of the students from farmer families?"

"The great majority, yes. But as you see, only one-third of them stick to farming. I think that the tendency to rush to other work is about at the turning point. Intensive agriculture is only starting in Kansas, but it will make a vast difference to the home farms in time. Good roads and motor cars and gasoline engines and the desire to beautify the farm as well as make it pay—all these are growing things out here and promise well for the future of the State."

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The De Laval Separator Company has just installed one of their latest models of steam turbine separators in the College Creamery. It is a very neat, compact machine and does excellent work.

**Local Notes.**

The *Kansas Aggie*, No. 3, made its appearance to-day.

The campus in front of Anderson Hall received its first cutting for the season this week.

Prof. Geo. A. Dean is making orchard investigations in the northeast part of the State this week.

Rev. W. T. McLain says that arrangements have been made for Mrs. Carrie Nation to visit Manhattan and to talk to the boys.

The freshmen had a marshmallow roast on the classic banks of the Wildcat Saturday night, May 1, and of course they had a glorious time.

The greenhouses are filled with young plants for spring planting. Cannas, phlox, asters, geraniums, etc., for bedding purposes are doing fine.

The course in public speaking has been broadened. Prof. J. E. Kammeyer finds an interested and enthusiastic class present at each recitation.—*Mercury*.

The game with the Fairmount College team last Tuesday afternoon in the Manhattan Athletic Park was easy. The score stood 11 to 2 in favor of our boys.

Four of the new Manhattan Street Railway cars have arrived. Manager West says that four more cars and four trailers were bought and will arrive soon.

The Horticultural Department has set out 2000 strawberry plants and expects to plant several thousand more this spring for testing and pollination experiment.

W. S. Elliot, of Manhattan, will furnish a tourist sleeper for the K. S. A. C.-Y. W. C. A. delegates to the Y. W. C. A. conference at Cascade, Colo., in June.—*Students' Herald*.

Three sophomore members of the civil engineering course are making a detail survey of the two quarter-sections of land that were bought by the Regents two weeks ago.

J. J. Winkjer, of the United States Dairy Division, was at the College Monday and scored the butter in the bimonthly scoring contest of the State Buttermakers' Association.

Prof. Olof Valley went to Kansas City last Thursday to assist at a big concert in Convention Hall given by a Swedish Military Band which is touring America by permission of King Gustav.

The Nemaha County Club is one of the most active county organizations of the College. It has lately given orders for a lot of class year-books to be sent to the high schools of Nemaha county.

Professor Andrews delivered the Commencement address of the Webber high school, April 30. There were six graduates—five girls and one boy. All intend to enter the College next September.

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Prof. W. A. McKeever has received an order for 150 copies of his cigarette bulletin from a party in Dumaguele (Negros' Oriental Prov.) Philippine Islands. Similar orders have been received lately from China, Japan, and India.

The lecture by Governor Vardaman, of Mississippi, Friday night, in the Auditorium, was well attended and well appreciated. Vardaman is a fluent platform speaker. As to his ideas on the burning questions of the South, they are too well known to require a discussion.

The trip of the College track team to Baldwin and Lawrence last Saturday and Monday, respectively, resulted in a defeat and a victory. In the K. U. contest we were outclassed in the hurdles, broad jump and two of the weights, the final score being 81½ to 35½. In the Baker contest our boys made 67 to Baker 64.

The Rocky Mountain Student Conference of the Young Men's Christian Association will be held again this year at Cascade, Colo. It will convene from June 8 to 17. The states represented in this Conference are Kansas, Nebraska, Colorado, New Mexico, Arizona, Utah, and Wyoming. The conference promises to be even better than last year.

The Poultry Division is doing some extensive work in the keeping of individual egg records of the various hens on the plant. Each egg is marked and the number of the hen placed thereon. When the egg is hatched in the incubator it is kept separate from all the rest, hence the chick can be leg banded and an exact record of its parents kept.

Professor Kendall is perfecting plans to reconstruct the dairy barn. He intends to put in a new cement floor, ceil the under side of the roof so as to permit the cleaning of the ceiling surface, build a new set of stanchions for the cows, remove the two silos at the east end, and make it a modern barn in every particular. The barn was built about ten years ago. When it was erected it was fully up to date, but since then many new improvements have been introduced in the model dairy stables of the large cities.

The selection of the additional Agricultural College lands have been completed by the land commissioners appointed by Governor Stubbs. The commission went first to the northwest district and selected land as follows: Gove county, 320 acres; Sherman county, 207 acres; Cheyenne county, 1120 acres; Rawlins county, 320 acres; total, 1967 acres. Most of this land is in settled sections and all is agricultural land and worth from five to fifteen dollars per acre. From the northwest part of the State the commissioners went to Dodge City and made the selection of five thousand acres in the Dodge City district to fill out the remainder of the grant of 7682 acres. The land in the northwestern part of the State has already been entered by the State in the government land office at Topeka and patents from the government to the State Agricultural College will be issued shortly.

***Alumni and Former Students.***

Minnie L. Copeland, '98, found her work at the Santa Fé hospital at La Junta, Colo., to be beyond her strength, and is now very pleasantly located at Bethesda Hospital, Topeka, Kan.

W. H. Phipps, '95, first alumnus member of the Board of Regents and later secretary of the College, was an interested and breezy visitor this week. Though he is here not infrequently, he found that several important items in our progress had escaped his notice hitherto, notably the new engineering building and additions.

Changes of address: W. H. Phipps, '95, 2412 Benton, Kansas City, Mo.; C. A. Campbell, Third and Ludlow streets, Dayton, O.; C. D. McCauley, '96, Fowler, Kan.; Gertrude M. (Conner) Snodgrass, '05, Lyons, Kan.; Gertrude (Hole) Campbell, '06, 1511 West street, Topeka, Kan.; J. G. Savage, '04, 730 Tyler street, Topeka, Kan.; M. L. Walter, '07, Selden, Kan., R. F. D. No. 3; C. W. Fryhofer, '05, 109 Mountainview Avenue, Nutley, N. J.; A. J. Cowles, '07, 489 Sixty-fourth Avenue, West Allis, Wis.; Mrs. Bertha (Bacheller) Foster, '88, Maplehill, Kan.

Claude C. Cunningham, '03, and May L. Griffing, '07, were married at the home of the bride Wednesday evening, May 5. The ceremony was performed by the Reverend Doctor Bright. The wedding had been preceded by several pleasant social events in honor of the bride, and Friday evening a reception in honor of the young couple was given by the groom's mother. Mr. Cunningham is assistant in agriculture at the Fort Hays Branch Experiment Station, a place that has witnessed the initial housekeeping of five or more "newlyweds" already, and good wishes will follow the latest addition to the ranks.

***Program Choral Union Concert, May 17.***

|                                               |             |
|-----------------------------------------------|-------------|
| Overture, "Rosamunde".....                    | Schubert    |
| ORCHESTRA                                     |             |
| "Paul Revere's Ride".....                     | Busch       |
| CHORAL UNION AND MR. HINSHAW                  |             |
| "Frühlingstimmen".....                        | Strauss     |
| MRS. HINSHAW                                  |             |
| Prologue, "Pagliacci".....                    | Leoncavallo |
| Danny Deever.....                             | Damrosch    |
| Auld Plaid Shawl.....                         | Haynes      |
| Heart Bowed Down, "Bohemian Girl".....        | Balfe       |
| Mother o' Mine.....                           | Tours       |
| The Stuttering Lovers.....                    | Hughes      |
| Figaro's Song, "Barber of Seville".....       | Rossini     |
| MR. HINSHAW                                   |             |
| Jewel Aria, "Faust".....                      | Gounod      |
| MRS. HINSHAW                                  |             |
| Duet, "Il Trovatore".....                     | Verdi       |
| MRS. HINSHAW AND MR. HINSHAW                  |             |
| "Hero and Leander".....                       | Lloyd       |
| CHORAL UNION AND MRS. HINSHAW AND MR. HINSHAW |             |



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# THE INDUSTRIALIST

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(Board of Instruction concluded on last page.)

THE INDUSTRIALIST

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No. 27

History of the Experiment Station.

(Excerpted from Dr. J. D. Walters' History of the Kansas State Agricultural College.)

(Continued from preceding issues.)

Since its organization the Experiment Station has issued one hundred fifty-seven bulletins and twenty annual reports. The former contain current matter of general interest to farmers, horticulturists, and stockmen, while the latter include data of all completed experiments, with brief references to those still in progress. All bulletins and reports are distributed free to those who apply for them. The usual edition of the earlier bulletins was seventy-five hundred copies, but the general demand for information on certain subjects has required much larger editions of late. During the past half-dozen years the number of applicants has increased so that many editions have run short with forty or forty-five thousand copies. The following is a list of the bulletins issued thus far. The titles give a fair index to the range and character of the investigations carried on by the different departments:

- 1888—No. 1. Organization, Equipment, and Aims.
- No. 2. Experience with Cultivated Grasses and Clovers.
- No. 3. Life-History of two Orchard Pests.
- No. 4. Experiments with Wheat.
- No. 5. Sorghum and Sorghum Blight.
- 1889—No. 6. Silos and Ensilage.
- No. 7. Experiments with Wheat.
- No. 8. Preliminary Report on Smut in Oats.
- No. 9. Experiments in Pig Feeding.
- 1890—No. 10. Notes on Conifers for Kansas Planters.
- No. 11. Experiments with Wheat.
- No. 12. Preliminary Experiments with Fungicides for Stinking Smut of Wheat.
- No. 13. Experiments with Oats.
- No. 14. Winter Protection of Peach Trees, and Notes on Grapes.
- No. 15. Additional Experiments and Observations on Oat Smut, made in 1890.
- No. 16. Experiments with Sorghum and Sugar Beets
- No. 17. Crossed Varieties of Corn, Second and Third Years.
- No. 18. Experiments with Forage Plants.
- No. 19. Germination of Weeviled Peas—Garden Notes on Potatoes, Beans, and Cabbage.

- 1891—No. 20. Wheat.
No. 21. Stinking Smut of Wheat.
No. 22. Smut of Oats; Smut and Rust of Wheat.
No. 23. Smut of Sorghum and Corn.
No. 24. Staggers of Horses.
No. 25. Sorghum for Sugar.
No. 26. Varieties of the Strawberry.
No. 27. Crossed Varieties of Corn.
No. 28. The Experimental Vineyard.
No. 29. Oats.
No. 30. Corn.
No. 31. Sugar Beets.
No. 32. Feeding Stuffs, and the Development of Grain Crops. Soy-Beans.
- 1892—No. 33. Experiment with Wheat.
No. 34. Experiments in Feeding Steers.
No. 35. *Actinomyces bovis*, or "Lumpy Jaw" of Cattle. Some Observations upon Loco.
No. 36. Experiments with Sorghum and with Sugar Beets.
No. 37. Experiments in Potato Culture.
- 1893—No. 38. Preliminary Report on Rusts of Grain.
No. 39. Experiments in Feeding Steers, II.
No. 40. Experiments in Wheat.
No. 41. Effect of Fungicides upon the Germination of Corn.
No. 42. Experiment with Oats.
No. 43. Experiments with Sorghum and Sugar Beets.
No. 44. Further Study of Native Grapes.
No. 45. Experiments with Corn.
- 1894—No. 46. Rusts of Grain, II.
No. 47. Experiments with Wheat. Experiments in Feeding Steers, III.
No. 48. Six Years' Experience with Ensilage. Some Forage Plants. Renovating a Prairie Pasture.
- 1895—No. 49. Cattle Poisoning by Potassium Nitrate. Mastitis.
No. 50. Kansas Weeds, I—Seedlings.
No. 51. Steer Feeding, IV—A Comparison Between Pure-Bred Short horns and Scrubs.
No. 52. Kansas Weeds—Preliminary Circular on Distribution.
No. 53. Pig-Feeding Experiments with Corn, Wheat, Kafir-Corn, and Cottonseed.
No. 54. Experiments with Oats.
No. 55. Small Fruits by Irrigation. Culture of Strawberries.
No. 56. Experiments with Corn. Experiments with Kafir-Corn.
- 1896—No. 57. Kansas Weeds, III—Descriptive List.
No. 58. Cornstalk Disease of Cattle.
No. 59. Experiments with Wheat.
No. 60. Steer-Feeding Experiments, Series V.
No. 61. Kafir-Corn, Corn and Soy-Bean Meal for Pigs. Kafir-Corn and Corn-Meal for Cattle.
No. 62. Corn-Smut.
No. 63. Experiments with Oats.
No. 64. Experiments with Corn.
- 1897—No. 65. Grafting the Apple.
No. 66. Kansas Weeds, IV—Fruits and Seeds.

1897—(Concluded).

- No. 67. Steer Feeding, VI.
- No. 68. Soil Moisture.
- No. 69. Some Diseases of Cattle.
- No. 70. Vegetable Growing.
- No. 71. Experiments with Wheat.
- No. 72. Growth of Young Stock.
- No. 73. Miscellaneous Fruit Notes.
- No. 74. Experiments with Oats.
- No. 75. Root Development of Forage Plants.
- 1898—No. 76. Kansas Weeds, V—Vegetative Propagation.
- No. 77. Some Insects Injurious to the Orchard.
- No. 78. Sugar Beets.
- No. 79. Bovine Tuberculosis.
- No. 80. Kansas Weeds, VI—Distribution and Other Notes.
- 1899—No. 81. Feed and Care of the Dairy Cow.
- No. 82. The Potato-Stalk Weevil.
- No. 83. Sugar Beets.
- No. 84. Cold Storage for Fruit.
- No. 85. The Growth of Alfalfa in Kansas.
- No. 86. Press Bulletins Nos. 1 to 34.
- No. 87. Native Agricultural Grasses of Kansas.
- No. 88. Keeping Milk in Summer.
- No. 89. Soil Moisture.
- 1900—No. 90. Alfalfa in Eastern Kansas.
- No. 91. Swine-Plague.
- No. 92. A New Drought-Resisting Crop—Soy-Beans.
- No. 93. Kafir-Corn.
- No. 94. Sugar Beets, 1899. The Station Publications.
- No. 95. Fattening Hogs with Drought-Resisting Crops.
- No. 96. Soil Inoculation for Soy-Beans.
- No. 97. Skim-Milk Calves.
- No. 98. Some Scale-Insects upon Kansas Grasses.
- 1901—No. 99. Press Bulletins Nos. 35 to 70.
- No. 100. Soy-Beans in Kansas in 1900.
- No. 101. Notes from the Plum Orchard.
- No. 102. Forage Plants for Kansas.
- No. 103. Digestion Experiments with Kansas Feeds. Sugar Beets in Kansas, 1891 to 1900.
- 1902—No. 104. Fall Seeding of Alfalfa.
- No. 105. Blackleg in Kansas.
- No. 106. The Experimental Apple Orchard.
- No. 107. Analyses of Corn, with Reference to its Improvement.
- No. 108. The Hardy Catalpa.
- No. 109. Spontaneous Combustion of Alfalfa.
- No. 110. Grapes.
- 1903—No. 111. Quality in Beef.
- No. 112. Fattening Steers Without Hogs to Follow.
- No. 113. Baby Beef.
- No. 114. Growing Alfalfa in Kansas.
- No. 115. The Exact Calculation of Balanced Rations.
- No. 116. Destroying Prairie-Dogs and Pocket-Gophers.

1903—(Concluded).

- No. 117. Bacteria of the Soil.
- No. 118. Flesh and Fat in Beef.

1904—No. 119. Press Bulletins Nos. 71 to 124.

- No. 120. Tests of Forest Trees.
- No. 121. Treatment and Utilization of Flood-Damaged Lands.
- No. 122. Blackleg and Vaccination.
- No. 123. Crop Experiments in 1903.
- No. 124. Experiments in Feeding Steers and in Breeding and Feeding Pigs.
- No. 125. Experiments with Dairy Cows.
- No. 126. Experiments with Hand-Fed Calves.
- No. 127. The Roots of Plants.
- No. 128. Fort Hays Branch Experiments, 1902-'04.
- No. 129. Kansas Mammals in Their Relation to Agriculture.

1905—No. 130. Steer Feeding Experiment, VII, 1903-'04.

- No. 131. Care of Dairy Utensils.
- No. 132. Western Feeds for Beef Production.
- No. 133. Alfalfa Seed: Its Adulterants, Substitutes and Impurities and Their Detection.
- No. 134. The Alfalfa Seed Crop and Seeding Alfalfa.

1906—No. 135. Grading Cream.

- No. 136. Press Bulletins (Collection 125 to 151).
- No. 137. Variations in the Test of Separator Cream.
- No. 138. Fact of Bacteria in Wash Water of Butter.
- No. 139. The Study of Corn.

1907—No. 140. Milking Machines.

- No. 141. Commercial Seeds of Brome-Grass, and of English and Kentucky Blue-Grasses: Adulterants and Substitutes and Their Detection.
- No. 142. The Value of Oil Road Improvement.
- No. 143. Disposal of Dairy and Farm Sewage, and Water-Supply.
- No. 144. Small Grain Crops.
- No. 145. Spraying.
- No. 146. Kansas Law Regulating the Sale of Concentrated Feeding Stuffs.
- No. 147. Indian Corn.
- No. 148. Kansas Law Regulating the Sale of Commercial Fertilizers.
- No. 149. Prevention of Sorghum and Kafir-Corn Smut.
- No. 150. The Hen's Place on the Farm.
- No. 151. Alfalfa Breeding: Materials and Methods.

1908—No. 152. The Pocket-Gopher.

- No. 153. Deterioration of Red Texas Oat in Kansas.
- No. 154. The Mound-Building Prairie Ant.
- No. 155. Alfalfa.
- No. 156. The Yellow Berry Problem in Kansas Hard Winter Wheats.
- No. 157. Studies on Hog-Cholera and Preventive Treatment.

The total number of bulletins and reports distributed by the Experiment Station during the twenty years of its existence reaches three million copies, and the demand for them is constantly increasing—a fact that speaks as well for the farmers of the State as it does for the work of the College. Several of the bulletins

were reprinted by creamery companies and manufacturers of agricultural machinery for free distribution among their patrons. Professor Cottrell's bulletin (No. 81), "Feed and Care of the Dairy Cow," has been used as a text-book in feeding by several other agricultural colleges. Yet, much of the work of the Experiment Station has not been published, because nearly all field or garden experiments require the corroboration of several seasons before the results can be trusted, and many experiments are discontinued for one reason or another before they have produced tangible results. In a laboratory experiment the manipulator can control the conditions to such an extent that single tests will usually determine the existence or non-existence of an anticipated fact; but in the field the ever-varying conditions of rainfall, wind, frost, drought, insect pests, rusts, etc., can not be controlled or eliminated so as to give in a single season all the required data for the conclusions sought.

The Agricultural College, through its Experiment Station, has not only become the accepted Kansas clearing-house for new methods and theories in farming, horticulture, stockraising, and dairying, but it has contributed much toward the actual introduction and spread of better grains, grasses, vegetables, forest trees, ornamental plants, etc. Its picturesque exhibits of grasses, alfalfa hay and Jerusalem corn at the big fairs in Bismark park, near Lawrence, twenty years ago, and its large displays of alfalfa, grains, grapes, and vegetables, at the State fairs in Topeka and Hutchinson were inspirations to thousands of farmers all over the West. The introduction in Kansas of the soy-bean, the red Kafir-corn, and many other drought-resisting crops, is the direct work of the Kansas State Agricultural College.

A great help in the work of the Experiment Station has been the franking privilege for its bulletins. The publications of the Station are transmitted free by the United States Post-Office Department. The following are the postal regulations in force since August 30, 1890:

(1) Any claimant of the privilege must apply for authority to exercise it to the postmaster-general, stating the date of the establishment of such station, its proper name or designation, its official organization and the names of its officers, the name of the university, college, school or institution to which it is attached, if any, the legislation of the state or territory providing for its establishment, and any other granting it the benefits of the provision made by Congress as aforesaid (accompanied by a copy of the act or acts), and whether any other such station in the same state or territory is considered, or claims to be, also entitled to the privilege; and also the place of its location and the name of the post-office where the bulletins and reports will be mailed. The application must be signed by the officer in charge of the station.

(2) If such application be allowed after examination by the department, the postmaster of the proper office will be instructed to admit such bulletins and reports to the mails in compliance with these regulations, and the officer in charge of the station will be notified thereof.

(3) Paragraph 3, section 419, Postal Laws and Regulations 1887, is hereby amended so as to read as follows:

"Only such bulletins or reports as shall have been issued after the station became entitled to the benefits of the act can be transmitted free, and such bulletins or reports may be inclosed in envelopes or wrappers, sealed or unsealed. On the exterior of every envelope, wrapper, or package must be written or printed the name of the station and place of its location, the designation of the inclosed bulletin or report and the word 'Free' over the signature or facsimile thereof of the officer in charge of the station, to be affixed by himself, or by some one duly deputed by him for that purpose. There may also be written or printed upon the envelope or wrapper a request that the postmaster at the office of delivery will notify the mailing station of the change of address of the addressee, or other reason for inability to deliver the same, and upon a bulk package a request to the postmaster to open and distribute the 'franked' matter therein, in accordance with the address thereon.

"Bulletins published by the U. S. Department of Agriculture and analogous to those of the station, and entitled to be mailed free under the penalty envelope of that department, may also be adopted and mailed by the several stations, with their own publications, under the same regulations, and any bulletins or reports mailable free by any agricultural experiment station under these regulations may be so mailed by any other station having free mailing authority.

"If such station's annual reports be printed by State authority, and consist in part of matter relating to the land grant college to which such station is attached, then said report may be mailed free entire by the director of the station; provided, in his judgment, the whole consists of useful information of an agricultural character."

The Post-Office Department has recently ruled that "in sending out bulletins from an agricultural experiment station it is permissible to inclose postal cards to enable correspondents of the station to acknowledge the receipt of its publications and to request their continuous transmission."

(4) The bulletins may be mailed to the stations, newspapers, or persons to whom they are by the foregoing act authorized to be sent, and the annual reports to any address within the United States.

(To be continued.)

Waterway Required for Bridges and Culverts.

In the building of culverts and bridges, both on highways and railroads, there is a chance for the display of considerable judgment in proportioning the opening. It may as well be admitted at the outset that nobody can tell with any degree of certainty the exact size of opening which will be required to safely pass the water following any particular line of drainage. This fact, however, does not justify the all too common practice of building bridges and culverts without making any attempt to determine the proper size of

opening. The absurd results and needless expenditure to which such carelessness may lead is well illustrated by a case which occurs near New York City. Of four bridges crossing the same stream, all within a distance of half a mile, the one farthest up stream is a highway bridge of two seventy-foot arch spans; next below is a four-track railroad bridge consisting of two forty-foot arches; below this is a deck girder highway bridge having a single fifty-foot span; and following is the oldest of the four, a simple wooden truss of twenty-five foot span. This latter opening had carried all the water for at least fifty years. Here, at least two of the structures noted are out of all proportion to the actual requirement.

A similar error, but in the opposite direction, is recalled in eastern Iowa. Two highway bridges were located on a small creek about half a mile apart. The upper one, near the head waters of the stream, was a timber box structure having a clear opening of about fourteen by seven feet, or ninety-eight square feet. The lower bridge, which served a drainage area which must have been nearly twice as great as that served by the first bridge, was a small stone arch having a clear opening about four by seven feet, or twenty-eight square feet. Thus it will be seen that the second bridge, having an opening only about one-fourth as large as the first one, was called upon to serve twice as large a drainage area. The larger bridge was frequently taxed to its full capacity. The smaller one was washed out in the summer of 1902, and a timber structure of more ample, though less graceful, proportions is doing duty in its place.

There are a number of factors which affect the size of waterway required in any given case. The most important of these are (1) the rate of rainfall, (2) kind and condition of soil and vegetation, (3) inclination and shape of the drainage area, (4) inclination and condition of the bed of the channel, (5) the grade of the culvert and form of opening, and (6) the height, if any, to which the water may be allowed to rise above the opening.

In considering the maximum rate of rainfall for which bridges and culverts should be designed, it is probably wise to neglect the extremely heavy rains such as may be expected over small areas only once or twice in a century. In order to insure stability against such extreme floods, it would be necessary to perhaps double the size and cost of all bridges, as compared with structures designed to discharge the water from the average heavy rainfalls of a locality. It is evident that it will be cheaper to build all bridges and culverts to accommodate this latter class of storms, and rebuild the small percentage which will be destroyed

every 50 or 100 years, than to double the cost of all such structures; which would probably be necessary if it were attempted to build them of such a size that none would ever be washed out.

The only satisfactory way of determining the rate of rain-fall which should be provided for in the design of bridges is by the examination of rainfall records taken at some point near the structure under consideration. To illustrate the manner in which such records may be used, let us consider the country surrounding Manhattan, within a radius of say fifty miles, using the records which have been kept at the Kansas State Agricultural College for the past fifty years. An investigation of these records furnishes the following interesting data. During fifty years:

- On 41 days the rainfall amounted to $2\frac{1}{2}$ inches or over.
- On 24 days the rainfall amounted to 3 inches or over.
- On 16 days the rainfall amounted to $3\frac{1}{2}$ inches or over.
- On 13 days the rainfall amounted to 4 inches or over.
- On 7 days the rainfall amounted to $4\frac{1}{2}$ inches or over.
- On 5 days the rainfall amounted to 5 inches or over.
- On 4 days the rainfall amounted to $5\frac{1}{2}$ inches or over.
- On 2 days the rainfall amounted to 6 inches or over.

Unfortunately, the rate at which the rain fell is not given, except in a comparatively few cases. In only two cases for which the time is given has the rate of rainfall been equal to or in excess of one inch per hour. It is believed, however, that if the records were more detailed, rates of rainfall of one inch per hour for short periods of time would be of more frequent occurrence. Not all of this rainfall would be discharged through the water courses, as a considerable part would soak into the ground. During the past fifty years no rain exceeding two and one-half inches in twenty-four hours has occurred during the months of November, December, January, February, or March, when the ground is frozen. So that this factor need not be considered. Then, too, since this rate of rainfall would continue for only a short time, a bridge would probably not be called upon to handle water at so great a rate as indicated by the maximum rainfall, because water from the entire area served would not reach it at the same time. Combining these two losses which decrease the rate at which water would reach the bridge, as compared with the rate at which it falls, we would have left a rate of probably not more than one-half an inch per hour to be passed by the opening. This is equal to a discharge of about 322 feet per second from each square mile of drainage area. Assuming a velocity of flow of ten feet per second, or about seven miles per hour, through the culvert, an area of about 32.5 square feet would be required to discharge the rainfall from one square mile of territory, or an opening six and one-half by five feet.

Several attempts have been made to develop formulas by which to compute the area of opening required for bridges. None of these, however, has proven entirely successful for general use. The oldest, and probably the best known, of these is that known as Myer's formula,

$$a = C\sqrt{\text{drainage area in acres.}}$$

In this formula a is the area of bridge opening in square feet and C is a constant depending on local conditions. If now we substitute in Myer's formula the results obtained above, it will read,

$$32.5 = C\sqrt{640},$$

since we found that for Manhattan an area of waterway equal to about 32.5 square feet would be required to discharge the water from one square mile, or 640 acres. Solving this equation we obtain for local conditions,

$$C = 1.3$$

Inserting this value of C in the first formula it becomes,

$$a = 1.3\sqrt{\text{drainage area in acres.}}$$

It is believed that this formula will give satisfactory results anywhere within fifty miles of Manhattan, where the country is of the same general character, for drainage areas up to four miles square.

For determining the amount of water which would have to be handled by a storm sewer, the same general line of discussion as followed above would be applicable.

In the case of bridges over water courses serving large drainage areas, the several factors mentioned near the beginning of this article are subject to such wide variation that it is difficult to give any rules which are of general application. The safest plan in a case of this kind is to visit neighboring structures over the same stream, during heavy storms, and note the conditions. In case there are no bridges over the same stream near the proposed site, a fair idea of the amount of water discharged may be obtained by measuring the velocity of the current during floods and then, after the flood has subsided, measuring the cross-sectional area of the stream up to the high-water mark. If the bridge must be put in hurriedly and there is no opportunity to make observations and measurements as above suggested, the best plan is to put in a temporary structure. During the life of this temporary structure, information may be obtained which will aid in correctly proportioning the one which replaces it.

L. E. CONRAD.

Gov. A. P. Riddle Killed.

Ex-Regent A. P. Riddle, of Minneapolis, was killed last Wednesday evening while automobiling with a party of four in Salina. They were driving on the edge of town when the automobile ran into an excavation, upsetting the party. Mr. Riddle was the only one killed, and at first the others all thought that he was only unconscious and he was picked up and placed in the machine. Before the party had reached Salina, however, they discovered that he was dead. Mr. Riddle was a Regent of this College from 1896 to 1897. He is very well known at the Agricultural College, and the many friends of the family extend their heartfelt sympathy. His daughter, Genevieve Louise Riddle, graduated in 1908.

Alexander Pancoast Riddle was born in Franklin, Franklin county, Pa., about fifty-five years ago. At an early age, through sickness, he was rendered a cripple for life. When but a young boy he was apprenticed to the *Spectator* office of his native town to learn the printing business, and served his full three years, after which he came West as a journeyman to complete his trade, and worked for a time in Osawatomie, Kan., and also held cases on the *Kansas City Journal*. He then drifted back to his home town and became foreman of the paper on which he had learned his trade.

It was about 1872 when he came to Kansas the second time, and shortly thereafter entered into the newspaper business at Girard, Kan., in the publication of the *Girard Press*, the style of the firm being Wasser & Riddle.

As a young man Mr. Riddle's abilities were recognized, and he represented Crawford county in the State legislature several terms. He was elected lieutenant governor the same year John A. Martin was elected governor, and as it is said that the administration of Martin was one of the best and most business-like the State has ever known, the same may be said as to the affairs of the office of lieutenant governor under Mr. Riddle's incumbency.

After serving his term as a State officer, Governor Riddle, in conjunction with A. R. Green (who in recent years has gained a national reputation in ferriting out the frauds in the timber reserves), went to Minneapolis, Kan., and purchased the *Messenger* from D. M. Dunn & Son, which paper he has run ever since.

Mr. Riddle was also publisher of the *Kansas Workman* for twenty-eight years, the *Sprig of Myrtle* for more than a quarter of a century, and the *Sons and Daughters of Justice*, another lodge paper. He was active in fraternal lodge work, and was known as the leading fraternal actuary in the United States.

Local Notes.

The Horticultural Department is building a macadamized road through the parade ground.

The teachers' course in domestic science will open Tuesday, May 18, and will be in session ten weeks.

Prof. J. E. Kammeyer delivered the commencement address at Esbon, Kan., on the evening of May 14.

Professor Kinzer is making preparations to build a stallion barn. The contract for the structure will be let in a few days.

In a closely contested game the second College team vanquished the Waterville team last Tuesday. The score stood 5 to 4.

Don't forget the Choral Union concert, May 17, in the College Auditorium. The program will be found in last week's INDUSTRIALIST.

The Riley County Agricultural Association will hold its annual fair at their fair-grounds, east of the Blue river bridge, during the week of September 21.

The State high school oratorical contest was held in Clay Center Friday night, May 7. Prof. Julius E. Kammeyer, of this College, acted as one the judges.

The city has finished the grading of Bluemont Avenue and the property holders along that fine street are circulating a petition for curbing its parkings.

The second team of the College went to Frankfort last week and played two games with the high-school team. One they lost and in one they were the victors.

W. H. Goodwin, '05, assistant entomologist in Ohio Experiment Station, has written an interesting illustrated bulletin on the insect enemies of the blackberry plant.

The Animal Husbandry Department has three Duroc-Jersey sows that possess a joint family of forty-five grunting youngsters, which demonstrate the prolificacy of the breed.

The Highland Park ball team, which had earlier defeated our team at Des Moines, met defeat here last Wednesday. The batting was heavy on both sides, but the better fielding of our boys resulted in a final score of 10 to 5.

The programs to be used for the Choral Union production of Hero and Leander, at the Auditorium Monday evening, were furnished by the College printery. They are printed in two colors on enameled paper and have a tasty cover.

Next Tuesday the College baseball team meets the St. Mary's team here. This will probably be the hardest fought game of the season. The visitors expect to bring a special train of rooters to back up their team, which has been defeated by but one college team this season.

The big traction-engine "Avery" was used this week in moving a cottage from the Kimball residence, near the old College farm, to corner of Manhattan Avenue and Laramie street. The mover tried it with nine horse teams first, but could not budge the structure. Good for the auto!

Fifty-four pupils out of a total of 193 candidates from the Riley county schools successfully passed the county examinations last week. Of these 35 are girls and 19 are boys. All of them expect to enter the Agricultural College. Last year there were 250 applicants and 78 successful candidates.

Four hundred students and citizens went down the Union Pacific railroad track to meet the champion walker, Weston, when he approached Manhattan last Monday evening. The weary old man would not speak to any of them, but drudged along with an easy swinging gate. He made 72 miles that day—that is, he walked from Topeka to Junction City, where he rested for the night.

Some time ago the electrical laboratory at the College was designated by the State Engineers' Association as the one best fitted to test transformers made by the various companies and intended for sale in the State. As a result, several of the manufacturers have complied with the implied demand and the tests of these transformers are now being carried out by some of the senior electricals.—*Mercury*.

The seven men who went from K. S. A. C. to the National Corn Exposition at Omaha were awarded gold medals by the authorities for their superior work in the contest. The medals are two inches in diameter and contain the monogram of the Exposition on the face and a space for the inscription of the recipient's name on the reverse side. This speaks well for both the department and the boys.—*Students' Herald*.

Professor Kinzer has completed arrangements for a combination shorthorn sale to be held at the College barn on June 11. The contributors will be the Agricultural College, the well-known firm of T. K. Tomson & Sons, and Sen. T. J. Warnall and son, of Liberty, Mo. Some of the best individuals and of the best breeding of shorthorns that can be found in America or Scotland will be offered for sale. Colonels Bellows, of Maryville, Mo., and Brady, of Manhattan, will conduct the sale. For catalogues and additional information address Prof. R. J. Kinzer, of this College.

The best you can do, the most it is in you to do,
is the least you have any right, for your own
sake, to do. :: :: ::

Alumni and Former Students.

Philip Fox, '97, has been elected professor of astronomy in Northwestern University, Evanston, Ill.

The Chicago alumni held their annual reunion at the Hamilton Club, Saturday evening, May 1. The attendance was fairly good, about fifty being present. John U. Higinbotham, '86, was toastmaster. S. W. Williston, '72, was elected president for the ensuing year. Among the visitors from out of town were Henrietta (Willard) Calvin, '86, from Purdue University, Philip Fox, '97, of the Yerkes Observatory at Lake Geneva, and President Nichols.

Mr. J. M. Graves, a successful farmer of Effingham, visited College last Thursday. He was a student of the Kansas State Agricultural College, what there was of it, way back in 1873 and '74, and had to come back, he said, to see how the institution had grown. Of course, he did not know himself in the "city on the hill." He wandered about from building to building astonished and amazed. He finally remarked to Professor Walters that the College had grown faster than Kansas City or Wichita.

Prof. Charles L. Marlatt ['84], of Manhattan, Kan., assistant entomologist of the United States Department of Agriculture, has filed a suit for \$5000 damages in the supreme court of the District of Columbia against Julius Peyser, a neighbor. Professor Marlatt says in his petition that Mr. Peyser had him arrested on charge of altering a fence which divided their residence properties without authority. He says he was acquitted by Judge Kimball in police court on April 13, but declares he has sustained an injured reputation. Professor Marlatt recently married the daughter of Bishop and Mrs. Mackay-Smith, of New York, and is prominent in social circles of the national capital.—*Nationalist*.

C. H. Withington ['06], who has charge of the Francis H. Snow entomological collections, received an invitation from one of the foremost insect collectors to accompany him on his annual collecting trip this summer to New Mexico. It has been the custom of this noted Coleoptera collector, who asks that his name be withheld for the present on account of being deluged with requests from collectors to accompany him, to work his way unaccompanied through the little known regions of the Southwest, and in this way has added more species to the North American fauna than any other insect collector of the present day. Mr. Withington has the privilege of taking a good collector with him if he deems it advisable, meeting the collector at Alamogorda, N. M., the latter part of June, when they will leave for a month of hard work collecting night and day.—*Lawrence World*.

**Genius is 2 per cent inspiration and
98 per cent perspiration.—Edison.**

Board of Instruction (concluded).

Miss Ada Rice, B. S. (K. S. A. C.)	Instructor in English
Miss Ella Weeks, A. B. (U. of K.)	Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount)	Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University)	Instructor in Veterinary Science
Miss Ula M. Dow, B. S. (K. S. A. C.)	Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University)	Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College)	Instructor in Chemistry
John B. Whelan, M. A. (Nebraska)	Instructor in Chemistry
Louis H. Beall, A. B. (Denison)	Instructor in English
Roy A. Seaton, B. S. (K. S. A. C.)	Instructor in Mechanical Engineering
William L. House	Foreman of Carpenter Shop
Louis Wabnitz	Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.)	Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.)	Foreman of Foundry
Miss Emma J. Short	Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.)	Assistant in Domestic Art
Miss Kate Tinkey	Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.)	Assistant in Printing
M. Francis Ahearn, B. S. (Mass. Ag. College)	Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.)	Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale)	Assistant in Architecture and Drawing
Chas. Yost	Assistant in Heat and Power Department
Earle B. Milliard	Assistant in Machine Shops
J. T. Parker	Assistant in Woodwork
J. D. Magee, A. M. (Chicago)	Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit)	Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary)	Assistant in Music
Miss Marjorie Russell (Mechanics' Institute)	Assistant in Domestic Science
Burton Rogers, D. V. M. (Iowa State College)	Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal)	Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.)	Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale)	Assistant in Chemistry
Hugh Oliver	Assistant in Heat and Power Department
Miss Charlaïne Furley, B. A. (Fairmount)	Assistant in English
Miss Jessie Reynolds, A. B. (U. of K.)	Assistant in Preparatory Department
Miss Mary F. Nesbit, A. B. (Illinois University)	Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.)	Assistant in English
William C. Lane, B. S. (K. S. A. C.)	Assistant in Electrical Engineering
Miss Flora C. Knight, A. B. (Univ. of Wyoming)	Assistant in English
Miss Grace H. Woodward (Boston School of D. S.)	Assistant in Domestic Science
Miss Nellie Cave, B. M. (Univ. of Nebr.) (Chicago Music Coll.)	Assistant in Music
Miss Margaret Mack (K. S. N.)	Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.)	Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.)	Assistant in Botany
Miss Mary W. Hancock (Mechanics' Inst.)	Assistant in Domestic Art
S. W. McGarrahan, A. M. (Grove City College)	Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.)	Assistant in Animal Husbandry
Kirk H. Logan, B. S. (U. of K.)	Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College)	Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University)	Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College)	Assistant in Preparatory Department
Miss Bertha M. Johnston (Simmons College)	Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.)	Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University)	Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.)	Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College)	Assistant in Dairy Husbandry
J. B. Parker, M. A. (Ohio State University)	Assistant in Entomology
Allen G. Phillips, B. S. (K. S. A. C.)	Assistant in Poultry
Miss Gertrude Cannon, Bethany Col. and Oberlin Conservatory	Assistant in Music
Miss Bertha Bisby	Assistant in Preparatory Department
Fred M. Hayes, D. V. M. (K. S. A. C.)	Assistant in Veterinary Science
L. D. Bushnell, B. S. (Wisconsin)	Assistant in Bacteriology
Miss Bertha Donaldson (Chicago University)	Assistant in Domestic Art
Miss Elizabeth Putnam (Chicago Art Institute)	Assistant in Drawing
L. E. Petty, A. B. (Wabash College)	Assistant in Mathematics
Jules C. Cunningham, B. S. (K. S. A. C.)	Assistant in Horticulture
Miss Annie E. Lindsey (Simmons College)	Assistant in Domestic Science
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Historical Society

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(Board of Instruction concluded on last page.)

THE INDUSTRIALIST

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NO. 28

History of the Experiment Station.

(Excerpted from Dr. J. D. Walters' History of the Kansas State Agricultural College.)

(Concluded from preceding issue.)

The extensive work of the Experiment Station, especially during the last decade, has gradually made it an important department of the College. The heads of nine science departments of instruction in the College are also put in charge of the several departments of investigation of the Station, and to a certain extent assistants serve in both capacities. The Experiment Station, therefore, is not at present definitely localized at the institution, but its work and property are more or less woven in with that of the College. The expenses of the Experiment Station work are separately accounted for, however, and its property is listed in separate inventories. While this arrangement involves some difficulties, it also possesses many advantages—advantages which are mutual. The College work profits by having the investigations of the Station going on alongside. The Station profits in that it thus obtains, without charge, the use of the College farm, buildings, heat, light, various collections, museums, and in some cases apparatus. As already stated, the expenses of the Experiment Station are met by an appropriation by Congress of \$15,000 per annum, which sum has been increased by the Adams act, of 1906. That year \$5000 was paid. This amount is increased \$2000 per year till the total becomes \$15,000. The aims of the Station may be said to be twofold—those which lead to immediate returns, and those the object of which can be reached only after a series of years. Experiments of the greatest value are often of the latter kind, but if the work of the Station were limited to such, the public would feel that nothing is being accomplished. It is the intention of the Station force to make all of its experiments practical, in the sense that they lead to results which, indirectly if not directly, benefit the agricultural interests of the country.

The so-called Adams bill was introduced in Congress by Representative Adams, of Wisconsin, December 4, 1905, and was

passed in the following February. Following is a copy of the act as it was passed:

AN ACT to provide for an increased appropriation for agricultural experiment stations and regulating the expenditure thereof.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the United States of America in Congress Assembled*, That there shall be, and hereby is, annually appropriated, out of any money in the treasure not otherwise appropriated, to be paid as hereinafter provided, to each state and territory, for the more complete endowment and maintenance of agricultural experiment stations now established or which may hereafter be established in accordance with the act of Congress approved March second, eighteen hundred eighty-seven, the sum of five thousand dollars in addition to the sum named in said act for the year ending June thirtieth, nineteen hundred six, and an annual increase of the amount of such appropriation thereafter for five years by an additional sum of two thousand dollars over the preceding year, and the annual amount to be paid thereafter to each state and territory shall be fifteen thousand dollars, to be applied only to paying the necessary expenses of conducting original researches or experiments bearing directly on the agriculture industry of the United States, having due regard to the varying conditions and needs of the respective states and territories.

SEC. 2. That the sums hereby appropriated to the states and territories for the further endowment and support of agricultural experiment stations shall be annually paid in equal quarterly payments on the first day of January, April, July and October of each year by the secretary of the treasury, upon the warrant of the secretary of agriculture, out of the treasury of the United States, to the treasurer or other officer duly appointed by the governing boards of said experiment stations to receive the same, and such officers shall be required to report to the secretary of agriculture on or before the first day of September of each year a detailed statement of the amount so received and of its disbursements, on schedules prescribed by the secretary of agriculture. The grants of money authorized by this act are made subject to legislative assent of the several states and territories to the purpose of said grants: *Provided*, That payments of such installments of the appropriation herein made as shall become due to any state and territory before the adjournment of the regular session of legislature meeting next after the passing of the act shall be made upon the assent of the governor thereof, duly certified by the secretary of the treasury.

SEC. 3. That if any portion of the moneys received by the designated officer of any state or territory for the further and more complete endowment, support, and maintenance of agricultural experiment stations as provided in this act shall by any action or contingency be diminished or lost or be misapplied, it shall be replaced by such state or territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such state or territory; and no portion of said moneys exceeding five per centum of each annual appropriation shall be applied directly or indirectly, under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings, or to the purchase or rental of land. It shall be the duty of each of said stations annually, on or before the first day of February, to make the governor of the state or territory in which it is located a full and detailed report of its operations, including a statement of receipts and expenditures, a copy of

which report shall be sent to each of said stations, to the secretary of agriculture, and to the secretary of the treasury of the United States.

SEC. 4. That on or before the first day of July in each year after the passage of this act the secretary of agriculture shall ascertain and certify to the secretary of the treasury as to each state and territory whether it is complying with the provisions of this act and is entitled to receive its share of the annual appropriation for agricultural experiment stations under this act and the amount which thereupon each is entitled, respectively, to receive. If the secretary of agriculture shall withhold a certificate from any state or territory of its appropriation, the facts and reasons thereof shall be reported to the president and the amount involved shall be kept separate in the treasury until the next Congress is in order, that the state or territory may, if it shall so desire, appeal to Congress from the determination of the secretary of agriculture. If the next Congress shall not direct the sum to be paid, it shall be covered into the treasury; and the secretary of agriculture is hereby charged with the proper administration of the law.

SEC. 5. That the secretary of agriculture shall make an annual report to Congress on the receipts and expenditures and work of the agriculture experiment station in all of the states and territories, and also whether the appropriation of any state or territory has been withheld; and if so, the reason thereof.

SEC. 6. That Congress may at any time amend, suspend or repeal any or all of the provisions of this act.

In July, 1908, Dr. C. W. Burkett, who had been director of the Experiment Station for two years, left to accept the more remunerative position of editor-in-chief of the Orange Judd Publishing Company, of New York, and Vice-Director Dr. J. T. Willard became once more acting director, till in December, 1908, he was relieved by the election of Prof. Ed. H. Webster, M. S., chief of the Dairy Division of the Department of Agriculture, Washington, D. C. A biographical sketch of Professor Webster will be found in this chapter. Among the special work of Doctor Burkett may be mentioned his trip, in the summer of 1907, to Turkey and southern Russia for the purpose of studying the methods of the European wheat farmers, the qualities of the wheat raised in those countries, and of making arrangements for the purchase of large quantities of seed wheat for the wheat growers of Kansas. The trip was made in response to an act of the legislature, approved March 9, 1907, appropriating \$2500 for the purpose. A similar trip was made by Prof. A. M. TenEyck, who went to Alberta, Canada, and by Prof. H. F. Roberts, who in the following year visited the Danube countries, Italy, and Germany. These trips, however, were practically without results because conditions did not allow time enough to procure, import and distribute the seed wheat between the harvests in Europe and the time of sowing wheat in Kansas.

There was, however, much improved Kansas seed distrib-

uted during the past four years. The Agronomy Department sold, practically at cost, nearly 4000 bushels of such seed of the best producing varieties of winter wheat, 1500 bushels of seed-corn, 800 bushels of seed oats, 550 bushels of seed barley, and smaller quantities of emmer, rye, flax, millet, cow-peas, soy-beans, Kafir-corn, broom-corn, sorghum, etc., or a total of about 7500 bushels. This does not include the seed distributed by the Ft. Hays Branch Experiment Station, which during the same interval distributed nearly as much seed wheat and several hundred bushels of seed-corn, Kafir-corn, and other seed-grains. Most of the seed which was distributed was simply purified samples of some of the best producing varieties as shown by the experimental tests, but even this seed was far superior to the average seed grown in the State, as shown by the comparative tests at the Station and by the reports of farmers. For instance, as reported in Bulletin 144, one of the improved varieties of winter wheat on the College farm actually produced a net profit of over twenty dollars (\$20) per acre in three years above that produced by common "scrub" wheat, of the same type, and similar results were secured with oats, barley, etc.

With corn, Kafir-corn and sorghum, greater improvement was accomplished than with small grains, since with these crops careful selection and breeding of seed was practiced with certain varieties which had proven most worthy, as shown by the variety test. The Agronomy Department is now breeding by the "head-row" method ten varieties of corn, two varieties of Kafir-corn, four varieties of sorghum, and one variety of milo maize, and much of the seed of these varieties was really pedigreed seed, or the product of selected ears or heads taken from the highest producing ear-test rows. (See Bulletin 147 on Corn Breeding.)

Special mention should be made of the work of the Department of Botany in seed breeding for the improvement of varieties of wheat and alfalfa. Prof. Herbert F. Roberts has done and is doing more extensive and scientific work in these lines than any other investigator in the country, and the College has the best collection of seeds for the purpose of comparing varieties outside of Washington, D. C. Professor TenEyck is carrying on a variety of tests of soils, of fertilizers, and methods of cultivation, and has done much work in improving corn and grains. The Veterinary Department is investigating moulds and smuts and their effect on stock. It is also making investigations of contagious diseases, such as hog-cholera, tuberculosis, and abortion. The Chemistry Department is investigating the protein contents of

alfalfa in its various stages of growth. It is also making analyses of feeds, milling tests, and hatching tests. The work of the Horticulture Department has been much broadened by an act of the legislature, passed in February, 1909, turning over to the College all the former experimental State plantations of forest trees at Ogallah and Dodge, and by the establishment of a State forester's office at the College. The Regents at their April meeting of the present year have elected Prof. Albert Dickens, of the Horticulture Department, to fill this important office. It is not possible to mention here the many lines of scientific and practical investigations carried on by the different investigators of the staff of the Experiment Station.

Ed. H. Webster, M. S., the present director of the Experiment Station, is a graduate and postgraduate of the Kansas State Agricultural College. He entered the freshman class in 1889, remained one year, then worked on the parental farm two years, then reentered again and continued for four years, graduating in 1896 with the degree of B. S. The last three years he specialized in lines of mechanical engineering and was compelled by circumstances to earn his way by working in the shops.

During the fall and winter of 1896 he worked in Chicago with the Aermotor Company in their experimental department. He then entered the Central Business College at Sedalia, Mo., and later accepted a position in Denver, Colo., with the school for poor boys. He then returned to the Kansas State Agricultural College as a postgraduate student and began work in dairying. From here he accepted a position as helper in a creamery at Meriden, Kan., at \$25 a month, but kept up his work at the College as a postgraduate student. He had then fully made up his mind that practical experience must be gained before success can be achieved, and in taking up work with this creamery company he did so with the understanding that he was to be placed in a position where he could gain experience, regardless of what the salary might be.

In the fall of that year the creamery company sent him to Ames, Iowa, for the special course in dairying that was offered at that time. He remained there about four weeks at the expense of the company and returned to the Meriden creamery as head man, with a salary of \$75 a month. The next ten months brought about a complete change in the organization of the company, headquarters being removed to Kansas City and consolidated with other creameries.

From here he went to Iowa State Agricultural College for the

purpose of completing the agricultural course and at the same time earning his way as a dairy assistant. He had charge of the details of the business management of the college creamery, taught classes, and was given the degree of B. Ag., in June, 1901.

About this time the Continental Creamery Company of Topeka, Kan., was looking for a man to take charge of the expert work in their factory, and Mr. Webster was employed at \$100 a month. In less than four weeks he was made general superintendent in charge of all the buttermaking operations, which produced per day twenty to thirty thousand pounds of the "Meadow Gold."

In the meantime various changes in the division of work and the personnel of the Faculty at the Kansas State Agricultural College had occurred, and the Board of Regents created a Dairy Department. A special committee of the Regents came to Topeka and insisted that the Continental Creamery Company release him, which was finally done, and he came to Manhattan as assistant professor in dairying in full charge of the Dairy Department, September 15, 1901, remaining here till March, 1903. The last few months his title had been changed to professor.

In the winter of 1902, Prof. R. A. Pierson, assistant chief of the Dairy Division at Washington, D. C., resigned, and examinations were offered by the Civil Service Commission to secure a register of names from which a new assistant chief could be selected. At the same time the Civil Service Commission offered an examination for inspector of renovated butter factories. Mr. Webster took both of these examinations. Amongst those who were competitors were Prof. D. H. Otis and E. H. Farrington, now of the University of Wisconsin, Prof. Oscar Erf, now of the University of Ohio, Prof. A. L. Haecker, of the University of Nebraska, Prof. C. B. Lane, then of the Agricultural College of New Jersey, and Professor Hayward, now director of the Experiment Station of Delaware. Mr. Webster had the good fortune to stand second in the examination for assistant chief against all of this competition. About this time there had been a demand made on Secretary Wilson for some research work in Kansas, along the lines of pasteurization and shipping of cream, and it was decided to offer Mr. Webster this work. He was given his choice of going to Washington as assistant chief in the Division, or assuming responsibilities in the other field. He chose the latter at a salary of \$2000 per year and began work for the department on April 1, 1903.

During the course of this work, the results of which have been published in a bulletin by the Dairy Division, he came in constant contact with many things in relation to the centralizing of the

creamery business, and found that it was practically impossible for him at that time to get the facts desired. He told the secretary frankly of the condition of things, and accepted, in January, 1904, the position as company superintendent of the Littleton Creamery Company, in Denver, Colo. During that year Major Henry Alvord died in St. Louis while on duty connected with the awarding of prizes at the World's Fair. This left a vacancy at the head of the Dairy Division in Washington, and Mr. Webster, when making a Christmas visit at Randolph, Kan., with the parents of his wife, received a telegram from the capital that he had been appointed chief of the Division and that he should proceed to Washington at once.

The professor modestly stated to the writer of these paragraphs that there was probably a good deal of disappointment on the part of some parties over his selection, as he was practically unknown outside of Iowa, Kansas and Colorado at that time. His previous experience as an agent for the Division had not impressed him strongly with the desirability of a government position, and it was well known that the work of the Division, up to that time, had been practically that of an editorial bureau, carrying on little, or no investigations, and that the work of the Division was discredited to a large extent by the dairymen of the country.

But he went to Washington, D. C., in January, 1905, to assume the duties of the office, with Mr. Lane as assistant, determined to do his best. One stenographer and two clerks were in the office, four men were employed annually as inspectors of renovated butter factories, and three or four employed on a per diem basis for similar work. He found a number of other things that were somewhat of a surprise to him. One was that the chief of the Division had, in times past, been expected to spend a good deal of his time in other work, probably because it was thought by those in charge that there was not enough work in dairying to keep one man busy.

His first work, after learning some routine of government red tape, was to look about and see what the great problems in dairying were that might be taken up by the Department. The first month he was hunting for work to keep himself busy, but before the end of the year he had added several men to the office force who were taking special lines of work. In a very short time the tables turned and he was hunting for men and money to do the work that waited to be done.

On leaving the office, December 22, 1908, there were on the rolls of the Dairy Division seventy-five regular employes devoting all their time to investigation, education, and office work. Appro-

priations for the office had increased from the sum of less than \$20,000 the first year to \$140,000 for the year ending June, 1909. This great growth of the work of the Division was due mainly to the fact that there was a great need for development along dairy lines and that few mistakes were made in the selection of men to carry out new lines of work. Every man in the Dairy Division was impressed with the fact that his success depended upon his own efforts, and that he would get full credit for all that he could accomplish. There was always a spirit of hearty coöperation between the various offices of the Division, and when it came to actually making the change from the Dairy Division back to the College at Manhattan the pleasant associations there with the employes of the Division made it hard for him to give up that work. He felt, however, that as far as he was personally concerned he had secured nearly all of the experience that could be gained in that position. The opportunity came for him to take up the work of dean and director in the Kansas State Agricultural College and he felt that it should not be turned down.

A year previous to that time the Regents of the College had, without consulting him, elected him professor of dairying. They based their action on a chance suggestion that he made to one of the members of the Faculty, never expecting that they would take action until they had consulted with him themselves. He could not at that time see his way clear to take up dairy work other than he was doing in Washington. The situation, however, was quite different when he was offered the position as dean and director of the Station and Agricultural Department of the College. This line of work opens up a field of great opportunities for future growth and development.

The Experiment Station has a great mission to perform, broader than that of solving the scientific problems relating to applied plant life and animal life. It must ultimately concern itself, too, with the life problems of the farmer and his family. In a recent address by Doctor True on "The Broad Outlook of the Agricultural Experiment Stations," he declared that the proper field of the experiment station lies along educational lines and that it must be filled for the benefit of the village and urban residents as well as the farmers. He said:

"With their existing financial limitations, the stations have properly given their attention principally to the needs of our large agricultural industries, but they have also done much which is of use to village and city people, and they will undoubtedly enlarge their work in this direction as time goes on and funds increase.

The farmers need have no fear that the stations will forget them or neglect their interests, but should rather rejoice that in the stations they have a powerful agency for bringing city people into closer sympathy with rural people. Already the work of the stations has created an entirely new agricultural literature, and . . . laid the foundations for a sound agricultural pedagogy, and . . . they must ever supply the new materials by which the courses can be strengthened and improved. But their work has a far more fundamental and far-reaching purpose; namely, to make agriculture a progressive industry and the masses of agricultural workers progressive men. Many plans for rural improvement have been made by philanthropists and statesmen, but they have largely been failures because they were imposed on the unwilling minds and hearts of unprogressive people. But if the rural people themselves awake and make their plans of improvement we may surely expect wonderful things. As an arouser of desire for improvement and a stimulator to intelligent effort to make the country a better place to live and work in, the agricultural experiment station has its chief importance and its highest mission. And it is for this service that the stations especially commend themselves to all the friends of rural progress, for if these fountains of new knowledge are kept strong and pure their waters will spring up forever to replenish the life of countless generations of rural people."

(The end.)

Seed-Wheat Train.

Kansas now leads the world in its acreage of well-bred, hard wheat, and the interest in improved seed is growing. The Santa Fé company has always shown a keen interest in anything that would help the farming interests in its territory. Three years ago this company conducted a seed-wheat train for the Kansas State Agricultural College over its southwestern lines, and now another seed-wheat train has been arranged for, the Santa Fé company furnishing the equipment and the College furnishing the speakers, through the Farmers' Institute and Extension Department.

This seed-wheat train will start on May 31 at Sedgwick and continue for six days, going south to Winfield, west to Wellington, Harper, Belvidere, and back to Wichita again, east to Pratt and back and up to Hutchinson, west to Dodge City, and then to Great Bend, west to Scott, and then east to Florence. Several side trips will also be taken, making altogether about seventy stops.

Notice to Contractors.

Sealed bids will be received by the undersigned till 2 P. M. Tuesday, June 1, 1909, for the completion of the Engineering Building at the Kansas State Agricultural College, in accordance with plans and specifications prepared by the State architect. A certified check for three per cent of the amount bid must accompany each bid. Mark envelope, "Bids for completing Engineering Building." The right to reject any and all bids is reserved by the Board of Regents.

E. R. NICHOLS, *Secy.*,
Manhattan, Kan.

Student Recital.

The following program will be rendered by the students in the Music Department, in the Auditorium, on Thursday evening, May 27, at 8 o'clock:

Mlle. Modiste.....	COLLEGE ORCHESTRA.	Herbert
Valse Brillante	HALLIE KALLENBACH.	Mowskowszki
Symphony No. 7.....		Haydn
Adagio	Allegretto	Presto
	FLORINE FATE	RUTH PLUMB
Polish Dance.....	CONSTANCE RICHMOND	Scharwenka
The Courier of Moscow.....	H. J. PLUMB	Rodney
Dance Caprice Op. 28, No. 3.....	BESSIE MOORMAN	Grieg
Wedding Day at Trolldhaugen.....	IRENE MCCREARY	Grieg
Valse in Eb.....	MAUDE THOMPSON	Durand
For All Eternity.....	MABEL STUMP	Mascheroni
Valse Caprice.....	GRACE TERHUNE	Newland
The Loreley.....	DeNELL LYON	Liszt
Valse in Bb.....	MARY DOW	Godard
Minuet.....	CLARA HUGHES	Paderevski
Bolero	PEARL SMITH	Raff
Awakening.....		Mrs. Mason
Ah! I Have Sighed to Rest Me.....	J. R. CARNAHAN	Verdi

Local Notes.

The campus received its second shave for the season this week.

The annual inspection of the College battalion was held to-day.

President Nichols attended the meeting of the State Board of Education last Friday and Saturday.

Director E. H. Webster went to Sedan, Chautauqua county, Thursday night, to address the high-school graduates of that city.

President Nichols will deliver the commencement address of the New Mexico College of Agriculture and Mechanic Arts, at Mesilla Park, N. M., May 26.

A recital by the Music Department will be held next Thursday, May 27, in the Auditorium. No admission will be charged. Doors will be open at 7:30.

Professor Dickens was at Topeka last week to confer with the county commissioners of Shawnee county and the city council of the capital city about oil road improvements.

Eight candidates for State teachers' diplomas took examination in the President's office last Wednesday and Thursday. Seven of these were graduates or students of the College.

Prof. R. H. Brown will devote the coming summer vacation to the study of the pipe-organ. He will probably stay in Manhattan and go to Kansas City once a week for instruction.

Prof. J. C. Kendall left Monday night for Jerseyville and Vandalia, Ill., to attend sales of pure-bred Jersey cattle, with the view of purchasing some animals for the College Jersey herd.

A number of juniors, accompanied by Instructor and Mrs. Beall, camped over Sunday and Monday near the Rocky Ford dam. They report a good time, though it rained and rained and rained.

The Horticulture Department counts a brand new mule colt among its recent inventory increases. The boy promises to score high when the stock-judging class borrows him for practice next fall term.

Frank Turner, special student of horticulture, left Tuesday for Ogallah Forestry Station, to assume the duties of foreman. With his household goods he shipped a car of implements and horses to carry on the work.

Dr. A. C. True, Director of the Office of Experiment Stations, Washington, D. C., has been here several days this week inspecting the work of the Experiment Station. The Office of Experiment Stations has the general supervision of the expenditure of the federal funds appropriated by Congress for the use of the states in their experimental work. It is customary for a representative of the office to visit the stations every year for the purpose of examining their work and methods. Doctor True expressed himself as well pleased with the condition of the Kansas Station.

The library receives regularly 130 magazines.

The library has just received a box of about fifty new books.

President Nichols was in Topeka Wednesday to consult with the State architect about the new buildings for which the legislature made appropriations last winter.

The new cottage built south of the College by Miss Gertrude Barnes is nearly completed. It will be a fine modern residence, equipped with city water, drainage, electric light, and furnace heat.

Miss Anne M. Boyd, formerly the head of the College Library Department, at present assistant in the St. Louis Public Library, has lately accepted a position in the children's department of the Decatur, Ill., public library.

Prof. C. M. Brink will go to Lindsborg Tuesday, May 25, to serve as judge at the annual oratorical contest at Bethany College. This is the eighth time within two months that Doctor Brink has been asked to render such service.

Thursday and Friday the College was visited by two expert European agriculturists, Prof. Dr. von Rumker, Director of the Department for Plant Products of the University of Breslan, and Prof. Dr. T. E. von Seysenegg, of the Department of Agronomy, of the University of Vienna, Austria. They were escorted about the College by Professor Roberts, took dinner with the Faculty in the dining-room of the Domestic Science Department and were very much pleased and interested by everything they saw. The great Kansas College was evidently a surprise and a revelation to them.

The Manhattan *Daily Nationalist* publishes the following write-up of the Choral Union concert, which was given at the College Auditorium last Monday night: "Owing to the inclement weather the attendance was small, but the entertainment was worthy of far more consideration. Mrs. Hinshaw's work as soprano was by far the best that has ever been presented in Manhattan, according to critics. Her tones were clear and the words of her songs were spoken plainly. Mr. Hinshaw, a brother-in-law of Mrs. Hinshaw, was a very forceful barytone singer. His rendition of 'Figaro,' from 'The Barber of Seville,' was especially fine, and his several selections from other operas were also well handled. He sang a selection from the Bohemian Girl entitled 'The Heart Bowed Down,' which was not so well sung. He sang as an encore, 'Good-night Little Girl Good-night,' but it was the sentiment of the audience that he was not adapted to sing sentimental pieces. The duett from *Trovatore* sung by Mr. and Mrs. Hinshaw was an especially good feature of the evening. The Choral Union in the work showed that they had had a great deal of careful training. Professor Valley is to be congratulated on being able to organize and train such a chorus. Harry Smethurst, who has sung several years with the Messiah at Lindsborg, says that the Choral Union will rank close with them."

The game with St. Mary's, last Tuesday, did not materialize because it rained and rained. Over fifteen hundred spectators and nearly that many umbrellas were in evidence, but the game had to be called off. It was postponed till May 27.

At an election, May 15, the Students' Coöperative Association elected the following officers for the following year: President, F. W. Winter; secretary, Carl Musser; manager bookstore, D. E. Lewis; assistant manager, R. E. Alexander; manager dining-hall, A. Endacott. The Association is in good shape financially. Its store sales since last September amount to over \$13,500, and there is a surplus of over a thousand dollars in the treasury. The dining-hall did not do as well as the store.

Alumni and Former Students.

O. L. Utter, class of '88, A. B., A. M., S. T. B., pastor of a large church in Springfield, Ohio, hopes to be with old friends in Manhattan next week. Mrs. Utter will accompany him.—*Republic*.

Earl L. Shattuck, '07, is taking a course in manual training in the shops. Mr. Shattuck is assistant in mathematics and mechanic arts in the Louisiana Industrial Institute, at Ruston, La.

A. Miyawaki, '07, has recently contributed to *Hoard's Dairyman* valuable articles on the calculation of rations for dairy cows and other animals, in which he introduces some new applications of little known principles.

Changes of address: A. D. Colliver, '05, Gage, Okla.; E. S. Taft, '08, 2514 Bancroft Way, Berkeley, Cal.; T. W. Morse, '95, 485 K. C. Road, Olathe, Kan.; S. E. Morlan, '04, Courtland, Kan.; C. A. Chandler, '00, Hickman's Mills, Mo., RFD No. 1.

Jerome Earl Cooley, '07, telephone engineer, has been transferred from the Omaha station to Jonesborough, Ark., where he will have full charge of the telephone station. He is working for the Bell Automatic Telephone Company, of Chicago, Ill.

Con M. Buck, '96, has been appointed city engineer for Manhattan. His long connection with the engineering work of the Santa Fé railway has given Mr. Buck an experience that will enable him to perform the duties of his new office with ability and success.

Rev. J. W. Bayles, former Manhattan boy and member of the graduating class of '89, has accepted a call from the Clay Center Baptist church. He has been pastor of the Baptist church in Onaga for the past five or six years and expects to leave for Clay Center about the 1st of June.—*Republic*.

C. M. Breese, '87, president of the Manhattan Alumni Association, has called a meeting of the association for Tuesday evening, May 25, at 8 P. M. The meeting will be held in the court-room. Election of officers will take place and other matters of business will be taken up. A large attendance is desired.

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(Board of Instruction concluded on last page.)

# THE INDUSTRIALIST

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No. 29

## ***The Agricultural Courses at the College.***

(From the *Alumnus*.)

We alumni are credited with knowing more about our Alma Mater and its needs than do other people less fortunate. This is doubtless true to a large degree, but there is much concerning the College of which one as a student learns almost nothing, and that is the part upon which a Regent or a member of the Faculty would be called to act.

Courses of study; the problems of education in general; the particular features of the land-grant colleges; the difficulty of meeting the demands of the ultra-practical and at the same time securing genuinely liberal culture and thorough scientific training; these are some of the questions to which the undergraduate gives scarcely a thought. In a realization of this the editor of the *Alumnus* asked the writer to prepare something that might assist the alumni to a better understanding of the present relation of the College to education for the farmer.

Most of the arguments in life find their cause of perpetuation in differences of standpoint. Before one can judge whether or not the College is giving courses of study such as it should for the education of those who are to busy themselves in one way or another with the most fundamental of all vocations, one must know what the field covers, what kinds of people are concerned, and what they need to be given.

No one can think at all on this subject without realizing that it is not a question of dealing with a homogeneous class, but with large groups differing widely in their school preparation, their practical experience, and their immediate and later purposes in life. One emphasizes one aspect of the case, the other another. Hence we may have one good friend protesting against the fact that the requirements are such that one cannot enter the freshman year from the country district school and obtain the degree of bachelor of science in four years, while another equally as good a friend criticizes the policy that holds the institution back from



going to full university requirements for admission to the freshman year. This would mean fourteen or fifteen "units;" that is, that number of subjects each of which has been studied daily in an approved high school for one year's time.

It is very evident to all who have thought on the subject or have participated in its discussion, that the question of courses of study at the College is not one upon which agreement can be readily reached, but rather one that will always be in controversy because of the perennial differences of opinion concerning the end to be attained and the class of people to be served. One thinks that the school should be "practical;" should teach the boy to plow, mow, run a header, and along with that acquire a limited amount of "book learning" of a strictly utilitarian character. He will favor soil physics and agricultural chemistry, perhaps, because the names sound as if they ought to help a man make more money, but a study of physics and chemistry without the qualifying words is looked upon as too theoretical.

On the other hand, we have the man who believes that an institution that one presumes to call a college must be a good deal more than a trade school. He not only believes that, but also that the college idea is a right one, that the farmer has opportunities for a breadth of view in his activities that those in very few vocations can equal, and that he should have an education that will give him this broad view. This man has education enough to see that no science can be studied primarily in its applications to a limited field, and realizes that a student grounded in the fundamental principles of the sciences of physics and chemistry will be fitted to apply them to agricultural problems as they appear. He sees that with a broad basis established the manifold daily applications may be handled intelligently and with far greater ease and certainty than any special set of rules of thumb could be learned and attached to their proper cases.

It is the old, old difference between the man who only cares to know *how* and the one who wants to know *why*. The former is limited to the cases which have been taught him, the latter has a store of science which will enable him to reason *how* in cases of which he has never yet thought. The former may rush in where scientists fear to tread and make himself ridiculous, the latter may know enough to know that neither he nor any one knows much concerning certain things, yet from his possession of all that is known be able to act wisely and to his profit.

There is presented herewith a tabular view designed to show the present agricultural courses and the relations among them.

| ALL COURSES FOR MEN.             |   |    | ALL AGRICULTURAL COURSES.                |    |   |
|----------------------------------|---|----|------------------------------------------|----|---|
| SUB-FRESHMAN.                    |   |    | SOPHOMORE.                               |    |   |
| Adv. English Grammar.....        | 5 | —* | Public Speaking I.....                   | 5  | — |
| English Readings.....            | 5 | —  | Military Drill, three terms.....         | —  | 4 |
| English Composition.....         | 5 | —  | Chemistry I, one and one-half terms..... | 5  | 4 |
| Ancient History.....             | 5 | —  | Chemistry II.....                        | 5  | 4 |
| Medieval History.....            | 5 | —  | Chemistry III, one-half term.....        | 5  | 4 |
| Modern History.....              | 5 | —  | Zoology I.....                           | 5  | 4 |
| Algebra I.....                   | 5 | —  | Entomology I.....                        | 5  | 4 |
| Algebra II.....                  | 5 | —  | Dairying.....                            | 5  | 4 |
| Algebra III.....                 | 5 | —  | Horticulture.....                        | 5  | 4 |
| Botany I.....                    | 5 | —  | Live Stock I.....                        | 2½ | 4 |
| Botany II.....                   | 5 | —  | Farm Equipment.....                      | 5  | — |
| Bookkeeping.....                 | 5 | —  |                                          |    |   |
| FRESHMAN.                        |   |    |                                          |    |   |
| English Classics.....            | 5 | —  |                                          |    |   |
| Adv. Composition.....            | 5 | —  |                                          |    |   |
| Rhetoric I.....                  | 5 | —  |                                          |    |   |
| El. Psychology.....              | 1 | —  |                                          |    |   |
| Freehand Drawing.....            | — | 4  |                                          |    |   |
| Object Drawing.....              | — | 4  |                                          |    |   |
| Geometrical Drawing.....         | — | 4  |                                          |    |   |
| Geometry I.....                  | 5 | —  |                                          |    |   |
| Geometry II.....                 | 5 | —  |                                          |    |   |
| Trigonometry.....                | 5 | —  |                                          |    |   |
| Military Drill, three terms..... | — | 4  |                                          |    |   |
| Physics I.....                   | 5 | 2  |                                          |    |   |
| Physics II.....                  | 5 | 4  |                                          |    |   |
| Agriculture.....                 | 5 | —  |                                          |    |   |
| Woodwork I.....                  | — | 4  |                                          |    |   |
| Woodwork II.....                 | — | 4  |                                          |    |   |
| Blacksmithing.....               | — | 4  |                                          |    |   |
| Surveying.....                   | — | 4  |                                          |    |   |

\*The figures in the first column show class-room exercises or lectures; those in the second column, laboratory periods.

| AGRONOMY.                     |    |    | HORTICULTURE AND FORESTRY.                           |    |    | ANIMAL HUSBANDRY.             |    |   |
|-------------------------------|----|----|------------------------------------------------------|----|----|-------------------------------|----|---|
| JUNIOR.                       |    |    | JUNIOR.                                              |    |    | JUNIOR.                       |    |   |
| Rhetoric II.....              | 5  | —  | Civics.....                                          | 5  | —  | Rhetoric II.....              | 5  | — |
| Civics.....                   | 5  | —  | Bacteriology I.....                                  | 2½ | 4  | Civics.....                   | 5  | — |
| Bacteriology I.....           | 2½ | 4  | Geology.....                                         | 5  | —  | Bacteriology I.....           | 2½ | 4 |
| Geology.....                  | 5  | —  | Plant Anatomy.....                                   | 5  | 4  | Bacteriology II.....          | 2½ | 4 |
| Plant Anatomy.....            | 5  | 4  | Plant Physiology.....                                | 5  | 4  | Anatomy I.....                | 2½ | 8 |
| Plant Physiology.....         | 5  | 4  | Plant Pathology I.....                               | 5  | 4  | Geology.....                  | 5  | — |
| Agricultural Chem. I.....     | 2½ | 10 | Agricultural Chem. I.....                            | 2½ | 10 | Zoology II.....               | 2½ | 4 |
| Soil Physics I.....           | 2½ | 4  | Soil Physics I.....                                  | 2½ | 4  | Agricultural Chem. I.....     | 2½ | 6 |
| Animal Nutrition.....         | 2½ | —  | Animal Nutrition.....                                | 2½ | —  | Soil Physics I.....           | 2½ | 4 |
| Stock Feeding.....            | 5  | —  | Stock Feeding.....                                   | 5  | —  | Animal Nutrition.....         | 2½ | — |
| Crop Production I.....        | 5  | 6  | Crop Production I.....                               | 5  | 6  | Stock Feeding.....            | 5  | — |
| Poultry.....                  | 2½ | 2  | Poultry.....                                         | 2½ | 2  | Crop Production I.....        | 5  | 4 |
|                               |    |    |                                                      |    |    | Farm Motors.....              | 2½ | 4 |
|                               |    |    |                                                      |    |    | Poultry.....                  | 2½ | 2 |
| SENIOR.                       |    |    | SENIOR.                                              |    |    | SENIOR.                       |    |   |
| American History.....         | 5  | —  | American History.....                                | 5  | —  | American History.....         | 5  | — |
| Economics.....                | 5  | —  | Economics.....                                       | 5  | —  | Economics.....                | 5  | — |
| Philosophy.....               | 5  | —  | Rhetoric II.....                                     | 5  | —  | Philosophy.....               | 5  | — |
| English Literature.....       | 5  | —  | Philosophy.....                                      | 5  | —  | English Literature.....       | 5  | — |
| Physiology.....               | 5  | 2  | English Literature.....                              | 5  | —  | Physiology.....               | 5  | 2 |
| Farm Motors.....              | 2½ | 4  | Entomology II.....                                   | 2½ | 4  | Embryology.....               | 5  | 4 |
| Soil Physics II.....          | 2½ | 6  | Pomology I or Forestry I.....                        | 5  | —  | Farm Management.....          | 2½ | 2 |
| Soil Fertility.....           | 2½ | 4  | Farm Management.....                                 | 2½ | 2  | Live Stock II.....            | 2½ | 4 |
| Farm Management.....          | 2½ | 2  | Fruit Growing or Dendrology.....                     | 5  | 4  | Live Stock Management.....    | 2½ | — |
| Crop Production II.....       | 2½ | 6  | Vegetable Gardening and Landscape Gardening, or..... | —  | —  | Pedigrees.....                | —  | 4 |
| Plant Breeding.....           | 5  | —  | Silviculture.....                                    | 5  | 4  | Animal Breeding.....          | 5  | — |
| Diseases of Farm Animals..... | 5  | —  | Thesis, 3 terms, total.....                          | 10 | —  | Diseases of Farm Animals..... | 5  | — |
| Thesis, 3 terms, total.....   | 12 | —  |                                                      |    |    | Obstetrics.....               | 5  | — |
|                               |    |    |                                                      |    |    | Thesis, 3 terms, total.....   | 12 | — |



To complete the view the studies as taught in sub-freshman classes are also shown. The several agricultural courses are alike to the end of the sophomore year. The sophomore year includes four vocational subjects which are deemed advisable for all. Each represents a different one of four of the courses open to election at the beginning of the junior year. It will be noted, too, that throughout, the culture subjects are alike in all the agricultural courses. The sciences differ somewhat and the vocational branches show the greatest variation. The Board of Regents voted, as a part of the basis for this latest revision of the four-year courses, that, as far as practicable, the work included was to be one-third cultural, one-third scientific, and one-third vocational. In the tables those subjects classified by the writer as cultural are printed flush with the left side, the scientific are indented to a certain extent, while the vocational are indented still more.

It is recognized that there can be no sharp lines separating these three classes and that many subjects fulfil all these functions to a degree. Furthermore, there might be, and indeed is, interminable discussion as to what is cultural, scientific, or vocational. There can be little question concerning certain of the subjects listed as cultural or scientific; in other cases the principle followed has been to classify under these heads branches that are fundamental and perhaps common to all four-year courses in the institution, and to include with the vocational, branches which are direct applications of mathematics or science. For example: Chemistry I, II and III are counted with the sciences, while agricultural chemistry and animal nutrition are placed among the vocational topics; physics I and II with the sciences, and soil physics with vocational studies; trigonometry is listed as cultural, surveying as vocational; entomology I, which is general in its nature, is placed with the sciences, while entomology II, which is economic entomology, is rated as vocational; etc.

Inspection of the tables shows that in the sub-freshman and freshman years the cultural subjects largely predominate, botany and physics being the only sciences, and bookkeeping, agriculture, shopwork and surveying the only vocational subjects. The heavy work in the sciences is done in the sophomore and junior years, and the vocational subjects predominate more and more as the courses advance. The dairy course and the poultry course are not shown in detail, as they differ from the animal husbandry course only in a few of the distinctive technical subjects.

If the number of term hours given to cultural, vocational and scientific subjects, respectively, in the four-year courses tabulated

be summed up, we find that in the agronomy course 84 class hours are given to cultural subjects,  $77\frac{1}{2}$  to scientific, and 101 to vocational. In the horticulture and forestry course the figures are: 84, cultural;  $78\frac{1}{2}$ , scientific; and  $94\frac{1}{2}$ , vocational, while in the animal husbandry course they are: 84, cultural; 86, scientific, and  $96\frac{1}{2}$ , vocational. The total number in the agronomy course is  $262\frac{1}{2}$ ; in the horticulture and forestry course, 257; and in the animal husbandry course,  $266\frac{1}{2}$ . In this summation the thesis time has not been included, being difficult to classify, and the laboratory time has been reduced so as to approximate a class room equivalent by dividing it by 2. A term hour is one hour of class work per day for one term or its equivalent. It will be seen that the cultural work is practically one-third of the total, the scientific somewhat too low, while to vocational subjects more than one-third of the time is given. If we include the sub-freshman subjects, 45 term hours would be added to the cultural, 11 to the scientific, and 5 to the vocational sums.

It is not the present purpose to make defense of these courses; probably they do not exactly meet the judgment of any single individual in all respects. They do represent, however, the composite result of prolonged and conscientious study by many men. While motive does not impel nor space permit any extended discussion of the reasons for every item of those courses, even if the writer were in possession of such reasons, possibly a brief statement of what seems to him to be the probable general estimate of the courses may not be out of place or useless.

The first point to be kept in mind is that these are *college* courses. They have been formulated pursuant to the general purpose for which the land-grant colleges were founded, *viz.*, to give to the industrial classes opportunities for liberal education comparable with that hitherto available only to certain professions; to fit men to be of influence in the communities in which they live, and to add in untold multiples to their capacity for appreciation and enjoyment of the worlds of nature, art, literature, and industry. Pres. Geo. T. Fairchild said that agricultural education was "not merely to make men farmers but to make farmers men." The graduates of agricultural colleges are educated by the State not solely for their own improvement, but that through them all with whom they come in contact shall be made better and wiser citizens. It is the judgment of most that this leadership among men can be won and held only by those possessing a poise of character, a clarity of thought, a grasp upon the significance of events, and a power of expression that comes only with culture in



English, history, civics, economics, public speaking, etc., and to which even the study of mathematics contributes not a little. Some get this culture without college assistance, but such training would materially aid all.

It is evident to all teachers that no serious hold can be gained upon the sciences by one who has not a firm grasp upon the significance of the language, and also that, as logical thought and mathematical deduction are constantly employed in these sciences, it is eminently fitting that sufficient English and mathematics should precede scientific study. How much is necessary for this sufficiency the writer does not intend to discuss. Whether the studies in those lines now required of our graduates are the best for the purpose indicated or not he does not know. That our graduates even now in many cases are painfully deficient in ordinary English expression is only too evident. That they are also weak when tested by relatively simple mathematical problems is known to some of us.

Concerning the need of careful study of the physical and biological sciences it would seem that no argument should be necessary. It is undoubtedly true that the art of crop production and stock feeding may be learned of men who know not calcium from corn chop, but who have by long years of close observation, and by reason of superior native ability and thoughtfulness, brought themselves to a high degree of skill and to a success the reasons for which they might be unable to state. The purpose of formal schooling is to impart sufficient of that which makes for success in less time than the school of experience would require. The purpose of agricultural college schooling is to establish the student on a basis of knowledge of the *reasons* for things, on an understanding of the order of Nature in her larger aspects of climate and mechanical manifestations, and also in the almost inscrutable marvels of molecular forces as exhibited in the physical and chemical changes incident not only to inorganic phenomena but to those of living things. Only those who have been through it can know how essential it is that the fundamental sciences be pursued carefully and extendedly, in order that their principles may be available for daily use in the practical applications that all appreciate. For these reasons botany, physics, chemistry, general entomology, bacteriology, etc., precede animal nutrition, stock feeding, horticulture, plant breeding, animal breeding, diseases of farm animals, economic entomology, etc. When a man is thoroughly grounded in the underlying sciences he is in position to read and study rapidly, accurately and critically

the practical subjects of courses of study and also the flood of publications continuously pouring from the press. Nothing short of such thorough grounding is worthy of the name of *college training*.

When we consider the so-called practical subjects required in the agricultural courses it will be seen that almost the entire range of agricultural activity is touched more or less. Those who think that practical agriculture is not attended to in the present courses as it was in the days of President Fairchild should contrast the array now presented with the two terms of agriculture, one of horticulture, one of agricultural chemistry, one of entomology and one of engineering then offered. The larger number now provided is made possible by the splitting of the courses and by the increased entrance requirements for the freshman year.

What shall be said to our friends who maintain that the entrance requirements are now too high? Or do they say the requirements for graduation? It amounts to the same thing anyway, if a four-year course is given. And what shall be said to our friends who maintain that these requirements are too low; that we are falling behind other institutions? To the former class I would suggest that generalities be abandoned and definite statements be made as to what should be cut out from present requirements and that the reasons for the suggested changes be given. The time is full. If more agriculture is to come in, something must be displaced or shifted, and yet fitness to pursue the added subject be assured by avoiding premature introduction. To the second class we can only say that some institutions are going too fast for us; that the college of fifty or seventy-five years ago did not give much, if any, more than many high schools to-day. We are offering graduate years which bring our course fully up to any offered. We are just about one year behind university entrance requirements of fourteen or fifteen units. A young graduate of K. S. A. C. entered the agricultural college of the University of Illinois last fall, gave the fifteen units required for matriculation, and received in addition  $101\frac{1}{2}$  credits out of the 130 required for graduation from the four-year course. One year would be  $32\frac{1}{2}$  credits, and he was back but  $28\frac{1}{2}$ . Let those who claim that we graduate students at the sophomore stage ruminate that fact. Our entrance requirements differ from the university standard chiefly in that Latin and other languages, aside from English, are not required, and our graduates are short that amount.

One of the charges made against the institution by some of our critics is that the degree of bachelor of science is conferred upon



graduates when they have done materially less work than is required of the graduates of very many other institutions conferring this degree. This is undoubtedly true, but, as shown by the preceding paragraph, the discrepancy is not nearly as great as some suppose. It must also be remembered that institutions cannot be and should not be exactly alike in their courses and requirements and that the value of a degree depends entirely upon the institution conferring it and not upon the degree itself. Even the degree of doctor of philosophy has been conferred for work of very little value compared with that required by the best institutions. On the other hand, let it not be forgotten that academic degrees to be of any value must not be given for work ridiculously less than that required by most institutions conferring the degree. Hence our College cannot consistently give the degree of bachelor of science to students who have not approached at least approximately the attainments of the graduates of other institutions giving that degree. It sometimes seems that it would be better if all conferring of degrees were abandoned at all institutions and each graduate placed wholly upon his record in the courses of study completed. Academic degrees, however, serve a useful purpose as a rough assortment of *prima facie* evidence. Every one knows that equality of degree by no means insures equality of ability.

As indicated earlier in this article, the constituency of the College is by no means homogeneous, and while every farmer would be a better one and a better citizen, and fitted for far greater enjoyment of life in all its aspects, could he complete one of the four-year courses, there are many who by stress of circumstance are unable to do so. There are many more who could compass the financial requirements had they the disposition, but appreciate only the ultra utilitarian subjects of the courses. They wish training in farming as a money-making business without any special regard to development of character, citizenship, or appreciation of the intellectual world at large. Courses for such people are regarded as proper to be given at the agricultural colleges, and they are offered in large variety, taking the country over. At our College short courses of two terms each are offered in dairying and in general farming. These courses are open to students of at least eighteen years of age and of good moral character who have completed the common schools or have similar preparation, and to those over twenty-one years of age who have sufficient education to understand simple text-books and handle problems in common and decimal fractions and percentage. The work given in these courses is almost wholly vocational and includes

subjects in the lines both of crop production and animal industry. Over two hundred young men took this course last year.

In some institutions a two-year course in agriculture is given. It is possible that such a course might be offered with advantage here, but if it is to differ from the first two years of the present four-year courses it must be recognized that the cultural work will probably have to be largely excluded. The sciences up to the end of the sophomore year are already about as little as will enable one to grasp properly the vocational subjects which it is assumed would constitute the main part of such a course. If special or briefer treatment of botany, physics, chemistry, entomology, etc., is regarded as sufficient, it must be remembered that the organization of such classes would add greatly to the expense of teaching, and in fact, in so far as additional students were brought to the institution by offering such a course additional funds and facilities would be required. Study of the four-year courses now offered will show that if we grant the necessity for the English training of the freshman year and for the English and history of the sub-freshman, the student, no matter where he stops short of graduation, will have had a good course. If he stops at the end of the sophomore year he will have had a good two-year course; if at the end of the junior year, a good three-year course.

Finally, all of the critics, if kindly disposed and fair, should consider that every added course or subject offered at the College adds to the expense in respect to the teaching force required, and usually in respect to equipment. In 1889 we had 445 students; in 1899, 870, and the roll for 1909 will probably reach 2300. The pressure for funds properly to care for these students can be realized only by those heads of departments who have been disappointed in not getting what they need, and, along with the scientific departments, those representing vocational work have at times been thus disappointed.

J. T. WILLARD, '83.

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Forty-four students of the Kansas State Agricultural College, of Manhattan, were at the Kansas City stock yards this morning. Dr. Burton Rogers, instructor in animal anatomy, and Prof. R. J. Kinzer, professor of animal husbandry, accompanied them. With the party were E. H. Webster, in charge of the Experiment Station at Manhattan, and J. A. Rosen, a Russian agricultural expert. Mr. Rosen is connected with the bureau of agriculture of Russia and is in this country to study the cattle business, particularly the production of heavy beef cattle.—*Kansas City Star*.



### ***A Sad Accident.***

Last Sunday morning Manhattan and the "College family" were shocked by the sad news that two students had drowned in the Blue river on Saturday night while coming home from the annual outing offered the Eurodelphians by their brother society, the Websters. In the afternoon the boats of a flotilla, carrying about a hundred merry students, floated down the Kansas river to a sandy beach where a picnic was held. After supper was served and a huge bonfire had been enjoyed, the boats were hauled overland across to the Blue, which at that point is only a short distance away. Here the party embarked again, and with songs and music started to float back again to the city. The night was dark and the boat containing Walter W. Goddard, Joy Harrison, Lester W. Coiner and Gladys Irish struck a snag, was capsized and its occupants thrown into the swollen stream. Mr. Coiner, after making an unsuccessful attempt to save the other members of the party, swam to the shore a short distance away. Miss Harrison clung to the overturned boat and was rescued some distance below the scene of the accident, while Mr. Goddard and Miss Irish failed to reach the shore and were drowned.

An organized search was conducted by relatives of the young people, assisted by numerous students and citizens. The body of Mr. Goddard was found Wednesday forenoon and was sent to his home, after appropriate exercises Thursday morning in the Presbyterian church. His father had come to Manhattan on Sunday to help in the search. The body of Miss Irish was found Thursday afternoon and the funeral services were held at the Congregational church Friday afternoon. The accident has cast a gloom over the entire College and vicinity and every one mourns with the sorrowing relatives of the two young people who met with such an untimely death.

Walter W. Goddard resided near Minneapolis, Kan., and was a member of the freshman class. As a society member and a student he was capable and studious, and esteemed by his college mates. Gladys Irish was the only child of Mrs. Eusebia (Mudge) Irish, daughter of the late Professor Mudge of this College. Her father died several years ago. Gladys was 19 years old, a junior in the domestic science and art course, and a beautiful young woman, and much beloved by her associates.

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The stock-judging class, conducted by Professor Kinzer, went to Lawrence last Monday to visit the stock farm of C. E. Sutton. On Tuesday they went to Kansas City to visit the stock yards.

**Local Notes.**

The Manhattan Chautauqua will be held in the City park this summer.

The Poultry Department sold 125 broilers last week at 25 cents per pound.

Professor Dickens delivered the Commencement address at Enterprise, May 21.

Professor Kendall on his recent trip bought a heifer of the Dairy Department of Missouri University, whose dam is one of the best Jersey cows owned by the University, and who has record of 13,332 pounds of milk and 736 pounds of butter for one year.—*Students' Herald*.

The evergreen seedling beds in the forestry nursery of the College have been producing a specially good stand this spring. The red cedar formula (two winters in sand and buried the intervening summer) gave as good results as the past three years. Several hundred thousand small trees were given the first taste of screened sunshine the past week. The pinion pine, which is a recent addition to our forest station list, is comparing well with the other American pines.

Governor Stubbs has announced the appointment of Hon. A. L. Sponsler, of Hutchinson, to the place on the Board of Regents of this College made vacant by the resignation of Hon. W. J. Tod, of Maple Hill, Wabaunsee county. Mr. Tod insisted on resigning his place for the reason that his many personal interests demanded all his attention and he could not possibly devote to the State the time and attention he thought he ought to and hold the place. Mr. Sponsler is one of the prominent and successful farmers of the State. He is the general manager of the Hutchinson State Fair, and was at one time president of the State Board of Agriculture. He is connected with several large business enterprises in Hutchinson. He owns a big ranch and a famous herd of Herefords in Reno county, and will undoubtedly be a strong man on the Board.

Following is the programme for the Memorial exercises, May 30 and 31, as arranged for by the Manhattan G. A. R.: Memorial Sunday at 2:30 P. M. The members of the G. A. R., Sons of Veterans, W. R. C. and Ladies of the G. A. R. and the flower companies will march to the Methodist church, where at 3 o'clock Dr. S. A. Bright will preach the Memorial sermon. Monday, Decoration Day, the first bugle call will sound at 9:45 A. M. and the band, the College cadets, the K. N. G., the G. A. R. members and the flower companies will form in marching order to proceed to the cemetery. After the flower companies have decorated the marked graves, the corps and circle will offer floral tribute to the monuments and the cadets will fire a salute. The organization will then return at 3 P. M. to the following program: Call to Order, Commander J. A. Sterret. Music. Prayer, Reverend McLain. Music. Lincoln's Gettysburg Address. Music. Annual Address, Prof. J. E. Kammeyer. Benediction, Rev. O. B. Thurston.



***Alumni and Former Students.***

The following items of interest are taken from the May number of the *Alumnus*:

Letta Keen, '02, now signs herself Letta (Keen) Duncan. She is living in Junction City, Kan.

Wirt S. Myers, '81, is working as pattern maker for the Gulf Machine Works, Pensacola, Fla.

O. R. Smith, '98, Zillah, Wash., is assistant irrigation manager, United States Reclamation Service.

Florence Corbett, '95, in addition to her work as department dietitian of public charities, New York City, is giving lectures in Teachers' College, Columbia University.

John Davis, '90, is professor of chemistry and physics in the Central State Normal School, at Edmond, Okla.

Ernest Adams, '07, assistant in the Bureau of Plant Industry, U. S. Department of Agriculture, is stationed at Philbrook, Mont.

Orville M. Kiser, '08, has recently been placed at the head of the Minnesota Manual Training School, at Canby, Minn. This school is one of ten of its kind in the United States.

Walter H. Olin, '89, of Fort Collins, Colo., occupies the position of industrial commissioner for the Northwestern Land and Iron Company, also for the Denver, Laramie & Northwestern Railroad.

Fanny G. Noyes, '99, has completed her training in Lakeside Hospital, Cleveland, and is now working as private nurse with headquarters at 1458 Wyandotte Avenue, Lakewood, Ohio.

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Chas. Eastman, '02, is now located at Cambria, Cal., where he is employed by the Bureau of Animal Industry in the work of eradicating cattle ticks.

Rev. O. L. Utter, '88, pastor of the First Methodist church, Springfield, Ohio, is taking an extended vacation, during which he, with Mrs. Utter, is visiting various points between his home and the Pacific coast. He was greatly impressed with the changes in the town and College, having had no realization of the great growth of the institution. Mr. Utter preached in the Methodist church while here. He also attended the meeting of the Manhattan Alumni Association Tuesday evening and responded to a call for a speech.

The Manhattan Alumni Association met Tuesday evening and discussed plans for Commencement. The association will tender a reception to all visiting alumni. It is planned to hold this reception in the Domestic Science and Art Hall, Wednesday evening at 8 o'clock. Light refreshments will be served and a full attendance of all resident and visiting alumni is desired. The plan for a summer picnic received some discussion, and one may be expected. The officers elected were: President, C. M. Breese, '87; vice-president, F. A. Marlatt, '87; secretary, Amy Allen, '04; treasurer, R. A. Seaton, '04.

The May number of the *Alumnus* is an unusually good one, the strong feature being letters from the alumni on the Pacific coast concerning various attractions in which the visiting alumni might be interested should they attend the Alaska-Yukon-Pacific Exposition. J. A. Rokes, '93, contributes "The Tale of the Burro," which will be interesting to his contemporaries. F. M. Jeffery, '81, writes an appreciative biography of his classmate, Darwin S. Leach, whose life with its pathos, almost tragedy, ended in a military hospital in Dutch Guiana last October. Other articles and numerous personal items and editorials make up a number which emphasizes once more that every alumnus should be a subscriber to this journal.

Harry W. Stone, '92, is prompted by the recent article in the INDUSTRIALIST on "Poultry Records" to write, and send printed matter, concerning some of the work in industrial education in which he is engaged as secretary of the Y. M. C. A. at Portland, Ore. It seems that the association has for many years been doing work in the direction of inducing young men to become producers of wealth rather than mere clerks or agents. It teaches the principles of carpentry, wood turning, wood carving, plumbing, forestry and lumbering, as well as poultry production. The Oregon Agricultural College at Corvallis coöperates with the association in furnishing through its department of College Extension bulletins giving instruction in poultry husbandry. These bulletins are sent to those whose names are furnished by the association. Hundreds of boys in the suburbs of Portland are, under this stimulus, taking up poultry raising. The average price of eggs during the year was 26 cents, and in the winter went as high as 75 cents. The high prices are in part caused by the demand from Alaska.

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### ***Program for Commencement Week, 1909.***

*Sunday, June 13.*—Baccalaureate Sermon, Rev. Benjamin Otto, Pastor First Baptist Church, Kansas City, Mo., College Auditorium, 4 P. M.

*Monday, June 14.*—Recital by Music Department, College Auditorium, 8 P. M.

*Tuesday, June 15.*—Examinations from 8:35 A. M. to 2:40 P. M. Senior Play to Invited Guests, College Auditorium, 8 P. M.

*Wednesday, June 16.*—Examinations from 8:35 A. M. to 11:50 A. M. Business Meeting Alumni Association, Assembly Hall, 2:30 P. M. Reception to visiting alumni and invited guests, Domestic Science and Art Hall, 8 P. M.

*Thursday, June 17.*—Annual Address, College Auditorium, 10 A. M., Dr. Shailer Mathews, D. D., Dean of Divinity College, University of Chicago. Presentation of Diplomas. Cadet Band Concert, College Auditorium, 2 P. M. Military Drill, 3 P. M.



*Board of Instruction (concluded).*

|                                                                |                                        |
|----------------------------------------------------------------|----------------------------------------|
| Miss Ada Rice, B. S. (K. S. A. C.)                             | Instructor in English                  |
| Miss Ella Weeks, A. B. (U. of K.)                              | Instructor in Drawing                  |
| Miss Daisy Zeininger, B. A. (Fairmount)                        | Instructor in Mathematics              |
| Leonard W. Goss, D. V. M. (Ohio State University)              | Instructor in Veterinary Science       |
| Miss Ula M. Dow, B. S. (K. S. A. C.)                           | Instructor in Domestic Science         |
| Theo. H. Scheffer, A. M. (Cornell University)                  | Instructor in Zoölogy                  |
| Herbert H. King, M. A. (Ewing College)                         | Instructor in Chemistry                |
| John B. Whelan, M. A. (Nebraska)                               | Instructor in Chemistry                |
| Louis H. Beall, A. B. (Denison)                                | Instructor in English                  |
| Roy A. Seaton, B. S. (K. S. A. C.)                             | Instructor in Mechanical Engineering   |
| William L. House                                               | Foreman of Carpenter Shop              |
| Louis Wabnitz                                                  | Foreman of Machine Shops               |
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| Ambrose E. Ridenour, B. S. (K. S. A. C.)                       | Foreman of Foundry                     |
| Miss Emma J. Short                                             | Assistant in Preparatory Department    |
| Miss Ina Cowles, B. S. (K. S. A. C.)                           | Assistant in Domestic Art              |
| Miss Kate Tinkey                                               | Assistant Librarian                    |
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| Miss Gertrude Stump, B. S. (K. S. A. C.)                       | Assistant in Domestic Art              |
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| Chas. Yost                                                     | Assistant in Heat and Power Department |
| Earle B. Millard                                               | Assistant in Machine Shops             |
| J. T. Parker                                                   | Assistant in Woodwork                  |
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| Burton Rogers, D. V. M. (Iowa State College)                   | Assistant in Veterinary Science        |
| Miss Clara Willis (Framingham Normal)                          | Assistant in Domestic Science          |
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| Edw. C. Crowley, Ph. B. (Yale)                                 | Assistant in Chemistry                 |
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| Miss Grace H. Woodward (Boston School of D. S.)                | Assistant in Domestic Science          |
| Miss Nellie Cave, B. M. (Univ. of Nebr.) (Chicago Music Coll.) | Assistant in Music                     |
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| Earle Brintnall, B. S. (Iowa State College)                    | Assistant in Dairy Husbandry           |
| J. B. Parker, M. A. (Ohio State University)                    | Assistant in Entomology                |
| Allen G. Philips, B. S. (K. S. A. C.)                          | Assistant in Poultry                   |
| Miss Gertrude Cannon, Bethany Col. and Oberlin Conservatory    | Assistant in Music                     |
| Miss Bertha Bisby                                              | Assistant in Preparatory Department    |
| Fred M. Hayes, D. V. M. (K. S. A. C.)                          | Assistant in Veterinary Science        |
| L. D. Bushnell, B. S. (Wisconsin)                              | Assistant in Bacteriology              |
| Miss Bertha Donaldson (Chicago University)                     | Assistant in Domestic Art              |
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| Jules C. Cunningham, B. S. (K. S. A. C.)                       | Assistant in Horticulture              |
| Miss Annie E. Lindsey (Simmons College)                        | Assistant in Domestic Science          |
| Amy Allen, B. S. (K. S. A. C.)                                 | Assistant in Printing                  |
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| R. C. Wiley, B. S. (Oklahoma A. & M. College)                  | Assistant in Chemistry                 |
| D. Edmund Rudolph                                              | Band Leader                            |
| J. H. Hollar                                                   | Foreman of Blacksmithing               |
| Porter J. Newman, B. S. (Franklin)                             | Assistant in Chemistry                 |
| Wm. A. Lamb                                                    | Poultryman                             |
| Floyd Howard                                                   | Farm Foreman                           |

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(Board of Instruction concluded on last page.)

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The College Man's English.

Recently a man of prominence in our State was heard to criticise the English spoken by college graduates as disgraceful and reflecting little credit upon the English work of our institutions of higher education. That he had in mind, especially, graduates of our own institution, the writer has no reason to believe; but that there is room for general criticism, there is no doubt. In view of this belief, and despite the fact that there are many other aspects of college life which would be more entertaining to the reader, we shall attempt to inquire into the main causes of this deplorable condition.

At the outset, the question naturally suggests itself, Is the College wholly responsible for the English of its graduates?

Those of us who are familiar with the work of technical schools are inclined to believe that poor English is more common among the graduates of such schools than among those of the universities. The cause is easy to find. Students in engineering and agriculture, or in any special course, give their undivided attention to that subject and deliberately neglect the culture of good English. To the writer's personal knowledge, several such graduates failed to secure certain positions, even along the line of their specialty, because of inability to write an application in clear, correct English. In addition to the cause above mentioned, we might suggest that in these particular instances, failure to use English correctly was due to *too early* specialization, and, moreover, to the attitude of the technical instructors who encouraged them in the feeling that they "didn't need no English instruction" for their speciality.

This same lack of good English is, however, noticeable, though perhaps to a smaller extent, in the graduates of universities, where the so-called "culture studies" are the rule and where interest in English is encouraged. The main cause, then, must lie outside the college and the university. We must look for it in the poor teaching of the secondary schools, and also trace it back still further to the careless speech of the ordinary American home.

It is not the purpose of this paper to discuss the latter cause, but in regard to the former let us quote from the report of the "Conference on Uniform Entrance Requirements in English," held in February of this year: "Preparation in English has two main objects. 1. A command of correct and clear English, both spoken and written. 2. Ability to read with accuracy, intelligence, and appreciation. The first object implies a knowledge of correct spelling, of grammatical accuracy, and of the principles of English composition, including letter writing."

This conference was composed of the leading authorities in English from the greatest institutions in our country, and these men in this report declare that the mastery of accurate English must come before entrance to college. Hence we conclude that the college is not wholly responsible.

In the same report this committee outlines a set of requirements for teachers of secondary schools, which, no doubt, would tend to raise the standard of the personal culture and in time reduce the number of inefficient teachers. Personally we do not wish to criticise the teachers of the public schools, but it has been observed that if such teachers are weak in any one point it is in the knowledge and use of English. For instance, on several occasions the writer has been called upon to explain so simple a thing as a transitive verb, to teachers in eighth grade work, and a ninth-grade teacher once explained to her that there were only "two of we teachers" boarding at a certain place. Moreover, these teachers were not college graduates, so that their poor English could not be attributed to laxity in that direction. *But they were preparing students for college.*

The College is responsible, however, to a certain extent. First, candidates for admission should be required to prove their fitness in English by rigid tests on entrance, and credits should be given sparingly. Thus at the threshold of his college career the student would be impressed with the estimate that is placed upon his use of language, and he would not be so likely to come to his English class in college with the attitude of a certain student who recently reported that he had wasted two hours in preparation of his lesson. *Wasted it!*

It is a fact, however, that many college students of the present day feel that any time spent upon studies, especially language studies, is wasted. They regard college as the one place where they can throw off serious responsibility, or, as Professor Briggs expresses it, "A place of delightful irresponsibility, where a youth may deport himself before he is condemned to hard labor." Their

attitude toward English, then, is only an index to their attitude toward work in general.

The technical student, however, is not afraid of work, the end of which will result in some practical benefit to himself in his chosen line. It is evident, then, that the technical school, in order to correct this feeling on the part of the student, must impress the prospective graduate with the vocational value of good English; that is, that it will be a valuable asset when he seeks a place in the markets of the world. In order to create this impression the English Department must have the coöperation of the instructors in other departments. Each must seek to cultivate in his students the use of correct speech. Then will the student in a measure correct the poor instruction of the public school, or the careless speech of his otherwise ideal home and associates, and after graduation may be a credit instead of a reproach to his Alma Mater.

The world has a right to expect a high degree of culture in the college graduate. Let us remember that the lack of culture is first observed in the college man's use of English. May there be an awakening on the part both of the public school and of the college in regard to this important matter.

ADA RICE.

The Origin of Lace.

From the information one can obtain, the earliest endeavor at lace making originated with the drawing of threads in linen fabric, then dividing existing threads into strands and working over them in various fanciful designs, either with a button-hole stitch or a wrapping stitch. This method is used at the present day, and is known as hemstitching and fine drawing. A later development suggested apparently cutting away of some of the threads, their place being supplied with others placed angularly or in circles. One author says the reason for lace was the unfinished edges of garments that would become fringed from wear, and this frayed or tattered condition gave rise to the thought of protecting the garment.

In the seventeenth and eighteenth centuries, mummies were exposed to view, tricked out in great richness. The French revolution was fatal to lace, but it revived under Napoleon the First. Queen Elizabeth had several thousand habits trimmed with lace, and dolls were even dressed as models of fashion in the fourteenth century. Lace reached its height in the reign of Queen Mary. Nobility

died in lace night-caps. It was also much used in burial in Denmark, and regarded as insignia of rank and station.

Until the discovery of an easy and simple way of decorating the linen ruffs and cuffs of the period, these had been quite plain. Afterwards the fashion of trimming garments of all descriptions with the pointed wiry edges of Venice became a mania and led to imitation in almost every country in Europe.

It is assured that it is to the nuns of Italy we owe the succeeding elaboration of Reticella, "Needlepoint." Some of the wonderful old point of this period is absolutely finer than the naked eye can see, a powerful magnifying glass being necessary to discern how the marvelous "toile" or gimp is made. The thread used in Brussels is of extraordinary fineness; the flax is grown in Brabant, the finest quality is spun in dark, underground rooms, for contact with dry air causes the thread to break, so fine is it as to almost escape the sight.

The persecution of the Protestants when the Huguenots fled to England, bringing with them their arts of silk weaving and lace making, led to the introduction of English lace. With the exception of "Old Honitou," England cannot boast of anything very fine. The lace Buckinghamshire ranks, perhaps, lowest in scale of lace products. Its only merit is its extreme durability.

The laces of Ireland are of comparatively recent growth, and though in many instances exquisitely fine, do not as yet show much originality.

The English lace merchants bought up the choicest laces of the Brussels market, smuggled them over to England and sold them under the name of Point de Angletere, or English Point. Point de Brussels became more and more known as De angle tere.

One means of smuggling lace was by taking a little dog, which had been well fed and cared for, over the mountains to the little towns where lace was made and while there would be ill-treated or half starved; then he would be padded with several thousand dollars worth of lace and placed in the skin of a larger dog and let loose. He would return home carrying his treasures with him. This smuggling was carried on for some time before it was detected.

Good queen Katherine, of Aragon, when the trade was dull, burned all her lace and ordered new to be made. The ladies of the court followed her example, and the fabric was once more revived.

Lace making naturally falls into two classes—the Needlepoint and the Pillow varieties. Point lace had reached the high state of perfection before the Pillow lace was invented. In some laces,

more especially of the Belgian class, there is a mixed lace, the "toile" or pattern being worked with the needle, and the ground, or "resaeau," made round it on Pillow, and *vice versa*. To the first-named class we must assign the Needlepoint laces of Italy and the exquisite hand-made laces of France. To the latter order belong the early Macrame lace, called "Punto a Groppo," The Genose and Milanese of Italy, Mechlin and Brussels of Belgian, Valenciennes Lille, and Chantelly of France, and the English laces of Honiton Buckinghamshire and Bedfordshire.

There is a little ivory statue in Berlin to the memory of Barbara Uttman, who was the inventress of Bobin or Torchon lace. Children begin making lace at four to six years of age, and at thirty many lose their eyesight.

The later laces, *i. e.*, those made during the last hundred years, have frequently a ground of machine lace, and thus, strictly speaking, are not lace at all, but only embroideries or appliques. The machine-made ground can be distinguished by sense of touch alone. If we take a piece of hand-made net between the fingers and thumb and slightly roll it, it will gather in a soft little roll, with the touch almost of floss silk. The machine-made lace is as regular as though made with a fine machine-fret saw, that of hand-made lace being of various sizes and often following the pattern of the lace design.

Of all laces perhaps the Torchon is most familiar to us all. Although we owe its origin to Barbara Uttman, of Berlin, yet at the present day we find beautiful Torchon made in our own State by Mrs. George Helget, of Pottawatomie county.

ANTONETTA BECKER.

From the Wheat Train.

The following dialogue, reported from Peck, Kan., is typical of a large but rapidly decreasing class of wheat raisers met by the College wheat train, which is now speeding from station to station in southwest Kansas:

A farmer whose general attitude of indifference marked him as a member of the old guard stood on the station platform at Peck this morning when the "Hessian Flyer" arrived. Fifty or more eager, laughing, dust-covered land owners hastened into the car to hear the lectures on wheat by the experts from the State Agricultural College. The backward member stood sullenly by smoking a cob pipe.

"Better go in and hear the wheat problems discussed," said J. H. Miller, superintendent of Farmers' Institute work.

"Huh," grunted the farmer, "I know all I need to know about wheat."

"How much do you get?" Mr. Miller asked.

"Oh, I get fourteen or fifteen bushels to the acre right along," the farmer replied.

"You can double that next year," Mr. Miller said kindly, "if you'll get in line, prepare your seed-bed as we do, and grow the kind we grow. What's the use of going along this way? Now, up in Manhattan——" But the recalcitrant walked away unheeding in the middle of the sentence.

"That fellow," a bright-eyed young farmer said a moment later, "has a whole section of land. It's good land, but he doesn't know how to handle it. He can't do his work on time and he's always getting left. His wheat is mixed and it gets the lowest grading. He won't try the best strains of the new Turkey wheat. He'd sooner go on producing yellow berries."

Kansas still has some of the old guard farmers. Happily, not all are so stubborn as the one in Peck. They have been found listening to nearly all the lectures by the experts. In Attica yesterday afternoon one of that kind shrugged his shoulders as he left the car and said: "I knew all that years and years ago."

"Well," cried one of the little group on the platform, "you have not practiced it, that's a moral certainty."

General conditions have everything to do with the reception accorded the wheat specialists. In some parts of Sumner and Harper counties, particularly Sumner, many farmers have quit wheat for corn, oats, and alfalfa. In some places the gloom was heavy. Farmers refused to organize institutes. Where the prospects were brighter, the men were more cheerful and eager to learn the new ways and means. Some old-timers say that their turning from wheat was because the land was "wheat sick," as land in the South is "cotton sick." The remedy for this, they all know, is crop rotation. Many who were discouraged two or three years ago have taken to the strong new varieties of Turkey wheats, like Kharkof, and Malakof, and Defiance.

A common source of seed mixing is from volunteer wheat, the lecturers tell their hearers. In order to keep wheat pure and of good quality the crop for seed should always be grown in a field free from volunteer wheat. This necessitates rotation preceding the wheat with some other crop such as oats, barley, or corn. In order that the fertility of the soil be maintained by such rotation, legumes and grasses should be included. If it is necessary to sow wheat after wheat, great care should be taken to destroy the

volunteer growth as far as possible by early plowing and frequent cultivation before seeding, or by disking immediately after harvest in order to start the volunteer wheat, which may be destroyed later by plowing.

No reports of Hessian flies have been received in Sumner, Barber, Sedgwick, Cowley, Kingman or Pratt counties. Smut has been found and some straw worms. The Hessian fly still has time to develop.

Recital by Music Department.

Following is the program for the recital to be given by the Music Department, in the College Auditorium, on Monday evening, June 14, at 8 o'clock:

- a.* Madame Butterfly.....Puccini
b. Hearts and Flowers.....Tobani

ORCHESTRA

- Toreador Song (Carmen).....Bizet

JOHN Z. MARTIN AND ORCHESTRA

- Hark, Hark the Lark.....Schubert-Liszt

MARY AUSTIN

- Rustle of Spring.....Sinding

MYRTLE OSKINS

- Fantasia Ballet, Op. 100.....DeBeriot

R. R. HAND

- Marche Militaire.....Schubert-Tausig

EDNA JONES

- Invitation to the Dance.....von Weber

WINIFRED NEUSBAUM

- a.* June.....Mrs. Beach
b. Sunshine and Rain.....Blumenthal

MRS. L. H. BEALL

- Silver Spring.....Mason

MARIE COONS

- a.* Nocturne Op. 9 No. 2.....Chopin
b. Polonaise Militaire.....Chopin

FLORINE FATE

- Oh, Robert, Robert (Robert LeDiable).....Meyerbeer

ESTA HUNGERFORD

- Polonaise in B.....Paderewski

IRENE INGRAHAM

- Sixth Rhapsodie.....Liszt

EUGENIA FAIRMAN

- Calm as the Night.....Götze

CLARE BIDDISON

H. E. PORTER

Profit in Hens.

Assistant Philips, of the Dairy Department, reports some very interesting facts concerning the laying of the fowls in the experimental pens of the College.

The pen of twenty S. C. W. Leghorns are still laying and have produced, in the 120 days of February, March, April and May, 1423 eggs, or an average of 71.1 eggs per hen. The heaviest laying was done by one hen, which laid 84 eggs in the four months.

With feed at two cents per pound and eggs at market price, a balance of \$16.35 over the cost of feed is credited to the pen. It has cost a fraction over ten cents per month to feed each hen.

The White Plymouth Rocks produced 814 eggs in 120 days, or an average of 74 eggs per hen. One hen laid 48 eggs successively, and a total number of 96 in 120 days. Another laid 94 in the same time. From this pen the balance was \$9.71 over the cost of feed. One Barred Plymouth Rock yearling hen laid 31 eggs in May, and is still laying.

The College is attempting to breed up a strain of heavy egg-producers, and such facts as the above should be of interest to the farmers who are working in the same direction.

Program for Commencement Week, 1909.

Sunday, June 13.—Baccalaureate Sermon, Rev. Benjamin Otto, Pastor First Baptist Church, Kansas City, Mo., College Auditorium, 4 P. M.

Monday, June 14.—Recital by Music Department, College Auditorium, 8 P. M.

Tuesday, June 15.—Examinations from 8:35 A. M. to 2:40 P. M. Senior Play to Invited Guests, College Auditorium, 8 P. M.

Wednesday, June 16.—Examinations from 8:35 A. M. to 11:50 A. M. Business Meeting Alumni Association, Assembly Hall, 2:30 P. M. Reception to visiting alumni and invited guests, Domestic Science and Art Hall, 8 P. M.

Thursday, June 17.—Annual Address, College Auditorium, 10 A. M., Dr. Shailer Mathews, D. D., Dean of Divinity College, University of Chicago. Presentation of Diplomas. Cadet Band Concert, College Auditorium, 2 P. M. Military Drill, 3 P. M.

The College library at present has on its shelves 35,064 bound volumes and over 18,000 pamphlets, valued at \$77,237. Over 1000 volumes on science and about 1500 volumes on other subjects were added during the present year.

Local Notes.

The senior girls of the Concordia Nazareth Academy visited the Domestic Science Department a few days ago.

Professor Rudolph and family will move into their new residence on Fremont street before Commencement.

Professor Kinzer visited several big stock farms of Iowa last week to purchase stock for the Animal Husbandry Department.

Assistant S. Brandt, of the Department of Architecture and Drawing, will spend the summer in the Rocky Mountains at mining engineering.

Pres. E. R. Nichols was absent last week, having gone to Mesilla, New Mexico, where he delivered the annual address at the State Agricultural College.

The seniors have challenged the Faculty to a game of baseball and the challenge has been accepted. Professor Cortelyou has been appointed to select an invincible team from the available pedagogues.

Miss Ella Weeks will go to New Orleans a few days before Commencement to begin her summer work as teacher in the Louisiana summer institute for drawing instructors. She had several calls for such vacation work this spring.

The sales of milk, cream and butter by the Dairy Department are very brisk this spring. It can hardly meet the demand. Forty-nine pounds of butter and several gallons of milk and cream were sold last Saturday to College parties.

Professor Walters has sent his "History of the Kansas State Agricultural College" to the bindery and will have it ready for distribution in September. It was printed by the Printing Department of the College and is a typographical beauty.

Prof. A. S. Hitchcock, formerly professor of botany here, is visiting his home and friends this week. Mrs. Hitchcock and the family will come later to spend the summer. The professor is on his way to Alaska. He will sail from Seattle on the 15th instant for Skagway, thence go by rail to White Horse, on the Yukon river, and from there by boat to St. Michaels and Nome, with frequent intermediate stops. The grasses of that region have not been studied, and Professor Hitchcock is making this trip for the purpose of investigating them.

The senior class of the Lincoln, Kan., high school, in company with their superintendent, R. E. Long, and Mrs. Long, and the senior class of the Nemaha county high school, in company with their principal, E. C. Farrar, visited College last week. The Lincoln class were on a round trip through the State to visit the State capitol in Topeka, the State Normal School at Emporia, the State University at Lawrence, and the State Agricultural College. Both classes looked bright and promising, and they evidently enjoyed their visit at the big College.

About twenty students will leave this week for Cascade, Colo., to attend the summer conference of the Y. M. C. A. and Y. W. C. A. Cascade is situated about ten miles above Colorado Springs and is a beautiful place for a summer camp. The expenses will be very low.

The cadets, headed by the band, took part in the Manhattan Memorial exercises last Monday. Both organizations appeared at their best and drew favorable comments from all who saw the procession. The annual address was delivered by Prof. J. E. Kammeyer.

The Dairy Department has recently purchased a Jersey cow and a Holstein bull from the Dairy Department of Missouri Agricultural College. The dam of the cow is one of the best milk animals of the fine Jersey herd of that institution. The dam of the bull is expected to produce 19,000 pounds of milk this year. His sire is one of the most noted of the breed.

On account of lack of space the INDUSTRIALIST has not reported much athletic news the past two weeks and it can not say much in this number. Our boys have lost several games and have won many. They were beaten in a sensational game down at St. Mary's. About five hundred students, headed by the band, went down there last Monday, sure to come home as the State champions. The College held its own very well and was ahead to the last inning, when one of the Catholics batted the ball into right field, near the foul line, scoring two men, and winning the game by a score of 3 to 2 in their favor. On Saturday our boys defeated the Manhattan League 5 to 4 in a seven-inning game. A week before our second team played the teams of Louisville and St. Mary's. It won the first of these and lost the second. The game with the Haskell Indians, which were considered a very strong team, was won by a score of 11 to 0.

Pres. and Mrs. E. R. Nichols gave their annual reception last evening from eight to eleven o'clock, complimentary to the senior class of the K. S. A. C. The floral decorations in all the rooms were in old rose, a class color, and the shades over the lights in chandeliers were in the same tint, which gave a lovely soft glow, very pleasing to see. A musical program in charge of Professor Valley was very much enjoyed by all, and consisted of vocal solos by the professor and piano solos by Miss Edna Jones and Miss Marie Coons. The host and hostess were assisted by Dr. and Mrs. C. M. Brink, Prof. and Mrs. J. T. Willard, Prof. and Mrs. Olof Valley, and Mrs. Van Zile. In the dining-room beautiful rosebuds formed table decorations. The class colors of pink and brown were carried out in the refreshments served. The rooms were filled with students, one hundred twenty-seven invitations having been sent out, and a delightful social evening was spent together. Before dispersing they all sang their "Alma Mater." The "good-nights," which followed, held a double meaning for all present, and the cordiality of host and hostess will be long remembered.—*Nationalist.*

The Manhattan Street Railway Company expects to run cars from the Union Pacific depot to the College next week. The track is completed, the power station is finished, and the electricians are at work on the trolley line. By Commencement the whole system ought to be in good running order.

For many years the library has been in need of a larger reading-room. It is now planned to add the biological laboratory room, directly east of the reading-room, to the latter by cutting a large arch through the wall. This will add about 800 square feet of floor space and relieve the pressure for two or three years.

Lack of space prevented the INDUSTRIALIST last week from crowing over the grand victory of our boys over all the other athletic teams at the great meet of the State down at Emporia. For the third time in six years the College has won the laurel wreath. There were seven institutions represented at the meet, and the Agricultural College made over one-third of all the points. Following is the summary of the meet: K. S. A. C., 55; Baker, 36½; Washburn, 26; College of Emporia, 21; Kansas State Normal, 18½; Cooper, 5; Fairmount, 2. Coach Whelan has proved himself worthy of his position.

Prof. E. von Tschermak, of Vienna, Austria, and Prof. von Rumker, of Breslau, Germany, who visited the College recently, were the guests of Professor Roberts. The gentlemen are two of the foremost plant breeders of Europe, and are being sent as commissioners by the governments of Austria and Germany, respectively, to inspect American work in plant breeding, and to confer with the investigators in these lines. Professor Tschermak was the discoverer, conjointly with the famous Professor DeVries, of the papers of Gregor Mendel, which led to the promulgation of the well-known "Mendel's Law" in plant breeding. Professor Roberts had the privilege of meeting Professor Tschermak in Vienna last summer, and of examining his experiments. The two gentlemen spent Friday at the College going through Professor Roberts' experiments in wheat breeding in great detail. They were immensely interested in the investigations in progress, and expressed themselves as amazed at the range and scale of the experiments, and as being extremely pleased with the scientific accuracy and thoroughness of the methods. The various special apparatus devised by Professor Roberts for his work aroused their utmost interest. The College as a whole pleased and interested the visitors greatly, particularly the work done in the Department of Domestic Science. Mrs. VanZile was hostess at luncheon Friday noon in the Domestic Science Department to Professors v. Tschermak and v. Rumker. The organization and operation of such a department, wholly unknown abroad, and the skill and tact of its head, called forth the most enthusiastic compliments of the guests. On Friday evening Mrs. Roberts gave a dinner party in honor of the distinguished foreigners. The evening was spent delightfully in German conversation and the singing of German songs.

In order to take advantage of the exceptionally low railroad rates which will be granted for the great National Epworth League convention, to be held at Seattle, Wash., in July, arrangements are now being made for a grand K. S. A. C. excursion at that time. The party will include members of the Faculty, ex-professors, graduates and former students of the Kansas State Agricultural College. Two sleepers will be provided for the party, and they will be routed through to Seattle with the privilege of returning by another route. Side excursions will be provided at moderate cost. Harry C. Rushmore, '79, of 2048 North 5th street, Kansas City, Kan., is in charge of the arrangements and will answer all inquiries about routes, cost, reservations of sleeper berths, etc. The excursion will start from Kansas City on July 3 and will pick up its members along the Union Pacific.

Some weeks ago the writer visited one of the famous Sutton farms at Lawrence, Kan., and came away in the firm conviction that Geo. Porteous has in charge the best bunch of young Aberdeen-Angus cattle we had ever seen on a breeding farm, and that the herd bull, Champion Ito, is the coming bull of the breed if, indeed, he has not already arrived. It is very pleasant, therefore, to have this judgment confirmed by such an authority as Prof. R. J. Kinzer, of the State Agricultural College, who said: "The Angus calves on Sutton farm are the equal of any I have seen on any farm in the land, and it is a pleasant surprise to me to know that every female of breeding age on the farm has a calf at foot or is well settled in calf. In so large a herd this is a remarkable condition and is a body blow to those who would belittle the breeding qualities of Angus cattle." Professor Kinzer is one of the most progressive teachers of animal husbandry in the country and, on Monday last, he took his large class of students from Manhattan to Lawrence to give them an opportunity to inspect the Berkshire and Aberdeen-Angus herds of Chas. E. Sutton and to study his methods. The occasion was more notable, perhaps, by reason of the fact that Hon. Joseph A. Rosen, chief of the Agricultural Department of his home state in Russia, was with the party. Mr. Rosen is investigating the agricultural and live-stock conditions and our farming methods for the benefit of his own people, and his visits to the Agricultural College and to Sutton farms were important as a means of getting this information at first hand. Mr. Sutton is enthusiastic in his praise of the earnestness of these young men who, in the near future, are to shape the destinies of the State, as well as her different breeds of live stock. Two of these students were subjects of the Mikado, and none were more intense in their efforts to gain all possible information. While at Sutton farm the owner offered a Berkshire boar pig as a prize to the student who scored highest in a judging contest. The pig was won by E. J. O'Toole, of Oberlin, Kan., on a score of 545 out of a possible 600 points. The students were entertained at luncheon by Mrs. Sutton and, after a thoroughly enjoyable and profitable day, took the train for a visit to the Kansas City stock yards, packing plants, and implement houses.—*Kansas Farmer*.

As the College year draws to a close the local editor feels like patting Custodian W. R. Lewis on the back for his faithful work during the past year. Mr. Lewis has not only cleaned offices, swept floors and rang bells—he has been a power for correct behavior among the students, and they like him for it. He is a gentleman and a born disciplinarian.

Alumni and Former Students.

Pauline (Wetzig) Terrass, '08, and her husband, of Dwight, Kan., are happy in the birth of a daughter, May 28.

Helen B. Thompson, '03, has been elected professor of home economics in the Rhode Island College of Agriculture and Mechanic Arts.

E. H. Freeman, '95, who has been assistant professor of electrical engineering in Armour Institute of Technology, Chicago, has been promoted to the full professorship.

F. E. Balmer, '05, has been elected to a position in the Clay County High School, where he will teach agriculture and the sciences. He will probably attend the summer school of the University of Kansas this summer.

R. S. Kellogg, '96, will make a study this summer of forest conditions in certain parts of Alaska, especially along the Yukon river. He will accompany Professor Hitchcock through a large portion of his trip, which is noted in the local paragraphs.

Miss Jessie A. Hoover, '05, has been elected professor of home economics in the North Dakota Agricultural College. She will begin her work by teaching in the summer school, which commences August 2. A commodious new building has been provided for by a recent appropriation, and Miss Hoover is to be congratulated upon this well-deserved advance.

Changes of address: Maude (Harris) Gaston, '08, Mossly Hill Farm, Barrington, Ill.; Mary Colliver, '05, 1061 West 31st street, Los Angeles, Cal.; V. Grace Dille, '97, 3425 Michigan Avenue, Kansas City, Mo.; P. H. Ross, '02, Montrose, Kan.; Lucy H. Waters, '94, 2634 Regent street, Berkeley, Cal.; C. E. Friend, '90, 1046 Massachusetts street, Lawrence, Kan.; A. M. Green, '86, Alturas, Cal.; A. B. Carnahan, '05, Western Avenue, cor. Franklin street, Lynn, Mass.; W. O. Peterson, '97, Randolph, Kan.

H. C. Rushmore, '79, called at the College this week. He wishes all alumni to understand that their "name will be Dennis" if they wish to join the excursion of the alumni to Seattle and do not let him know not later than June 26, as the contract with the Union Pacific company must be closed at that time if a special car for the exclusive use of the party is to be obtained. The excursion will leave Kansas City at 10:00 A. M., Saturday, July 3, reaching Seattle the next Tuesday. Several special excursions are being planned by our Seattle friends for the entertainment of the visitors. If you wish to go, do not postpone decision.

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Floyd Howard	Farm Foreman

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A Retrospect.

The Commencement exercises of 1909 will close the most prosperous year in the history of the Kansas State Agricultural College. It has been a year of effective work and good cheer, a year of progress and growth. The institution had many trials and tribulations during the past winter, but they did not affect its class rooms and laboratories. The students worked hard and behaved well; there were fewer disciplinary cases than ever before. The difficulties which the College had to overcome came from without. For years the institution had asked only for a fair chance to show what it could do. It asked for nothing but to be let alone. It envied nobody and fought nobody—it just worked and kept its peace. It gradually became the great technical school of Kansas and the West—it grew and grew. This was noticed with envy in some parts of the State, and there came trouble—efforts to divide its rich endowments, efforts to divide its work, efforts to consolidate it with the State University. When the legislature met it was necessary for the College to fight for its very life. Even some of its friends were so scared that they were willing to compromise the case. But the close of the year has convinced all that the school at Manhattan is all right and indivisible.

THE STUDENTS.

The whole complex machinery of a college, from the text-book and the laboratory bench to the experimental farm and the professor, has but one main purpose—to make the student a better man and a more useful citizen, a man who will think right and do right, vote right and work right. The Kansas State Agricultural College has always believed in this, and its common-sense methods of achieving this purpose have made it in the course of a single generation one of the largest technical schools in the world. The forthcoming catalogue will enumerate for the present college year an attendance of 2306 students. Of these 1563 are young men and 743 are young women; 134 are members of the preparatory course,

521 are sub-freshmen, 491 are freshmen, 381 sophomores, 243 juniors, 171 seniors, 28 graduates, and the rest special students or short-course students. The graduating class will probably number way above the one hundred mark and will be the largest in the history of the College. The average age of the students is above 20 years—that of the freshmen is $19\frac{3}{4}$ years, that of the seniors above 23 years, and that of the graduates above 24 years.

The total annual cost for the year per student was about \$115, which is over forty per cent less than the average annual cost per student at the twenty-two state institutions of the Middle West. Several conclusions may be drawn from this fact, some of which are not flattering to the rich State of Kansas. It certainly means, too, that the work of the College has been well conducted and that the strictest economy has prevailed in all of its departments.

THE FACULTY.

The catalogue of 1908-'09 will give the names, titles and chairs of nearly a hundred and fifty officers and regular employes, exclusive of half a hundred student assistants. The College has at this writing:

Professors and heads of departments.....	27
Assistant professors.....	17
Instructors.....	12
Foremen and assistants.....	61
Custodian, clerks, and other officers	18
Officers and employes of the Experiment Station, not enumerated above	10
Total	145

There were few changes in any of the chairs during the year, a fact of which the College should be congratulated by its friends. The increase of salaries of the professors, granted by the Board two years ago, has prevented the periodical "stampede" among the members of the Faculty who were forced by the constantly increasing cost of living to look for better paid positions in eastern institutions.

A number of professors and assistants were added to the Faculty last summer. The increase of teachers was especially large in the agricultural departments, which during the previous year had been divided into the Departments of Agronomy, Animal Husbandry, Dairying, Veterinary Science, and Farmers' Institutes.

BUILDINGS AND IMPROVEMENTS.

The totals of the biennial State appropriations which the College received during the last decade amount to over two million dollars. A considerable portion of these appropriations was received

for erecting the needed buildings and providing the needed permanent improvements of the grounds. Following is a synopsis of these items, together with the dates:

Buildings.	Year.	Cost.
Agricultural Hall.....	1900	\$25,000
Dairy Barn.....	1900	6,000
Shop additions.....	1900	9,000
Chemistry and Physics Hall.....	1902	70,000
Sewer system.....	1901	3,000
Water system.....	1901	10,000
Library addition.....	1903	10,000
Auditorium.....	1904	40,000
Dairy Hall.....	1904	15,000
Shop addition.....	1905	5,000
Four cattle barns.....	1905	3,000
Boiler room addition.....	1906	3,000
Horticultural Hall.....	1906	50,000
Granary.....	1906	5,000
Engine room addition.....	1907	3,000
Domestic Science Hall.....	1908	70,000
Veterinary Science Hall.....	1908	70,000
Blacksmith shop addition.....	1909	8,000
Woodshop addition.....	1909	15,000
Boiler room addition.....	1909	15,000
Mechanical Engineering Hall.....	1909	50,000
Gas plant.....	1909	10,000

It will be seen that the total expense, including the heating and plumbing, of these buildings amounts to considerably more than half a million dollars, while the building repairs, campus improvements, roads and walks have cost a total of about two hundred thousand dollars. These are large figures, yet the College has undoubtedly built and repaired cheaper than other State institutions and has to-day more to show for its expended funds. The above table will show that during the past year the College has been fortunate in getting several new buildings added to its "Hill City." The new Domestic Science and Art Hall and the Veterinary Science Hall are models of their kind that will endure the wear and tear of a century.

MORE LAND.

In addition to these buildings and improvements, the College added during the last decade several large and valuable tracts of land to its inventory. Some of this land was obtained through purchases and some by act of Congress. There were added in

1900.....	240 acres in Ford county.
1901.....	3600 acres in Ellis county.
1904.....	107 acres in Manhattan.
1908.....	7684 acres as balance of endowment.
1909.....	320 acres in Manhattan.

This last purchase of two quarter-sections increases the College farm proper to 750 acres.

THE CONTROVERSY WITH THE UNIVERSITY.

In the summer, fall and winter of 1908-'09 the College was involved in a serious controversy with the State University over the "proper sphere" of the two institutions. The State University had tried hard during the early seventies to obtain State legislation that would remove the College to Lawrence and combine it with the University, but, through the political influence of Presidents Denison and Anderson, Ex-Governor Green, and other citizens of Manhattan, all attempts had proved unsuccessful. In the spring and summer of 1908 the efforts of "Lawrence" to absorb the College were renewed, and in the winter of the present year the controversy got into the State legislature. This time the plan did not involve the removal of the whole "plant," but called for the abolishing of the organized courses in engineering and the consolidation of the two institutions under one board of regents. Owing to the very decided stand taken by the students, alumni, and friends of the College, the plans of the University failed when they reached the State legislature.

EXPERIMENT STATION AND FARMERS' INSTITUTES.

The past year witnessed also a rapid development of the work of the Experiment Station Department and the Farmers' Institute Department. The former greatly increased its efficiency through the purchase of more land adjoining the College farm on the north, where two quarter-sections were added this spring. In the fall of last year the Board filled the vacancy in the chair of Director of the Experiment Station caused by the resignation of Doctor Burkett by electing Ed. H. Webster, formerly the chief of the Dairy Division of the Agricultural Department. Professor Webster is a graduate of this College and had been for a time professor of our Dairy Department. During the intervening period, from June till December, the office of Director of the Station was ably filled by Dr. J. T. Willard.

During the past year the Station has published six pamphlet bulletins and a large number of press bulletins. The former are:

No. 152.....	The Pocket-Gopher
No. 153.....	Deterioration of Red Texas Oats in Kansas
No. 154.....	The Mound-Building Prairie Ant
No. 155.....	Alfalfa
No. 156.....	The Yellow Berry Problem in Kansas Hard Winter Wheats
No. 157.....	Studies on Hog-Cholera and Preventive Treatment

The total number of bulletins and reports distributed by the Experiment Station during the twenty years of its existence reaches three million copies, and the demand for them is constantly increasing.

The limited pages of the INDUSTRIALIST do not permit the mentioning of the diversified scientific work carried on by the different departments of the Station. Much has been done the past four years in seed-breeding, especially of winter wheat, by the Department of Botany, and in wheat improvement by the Department of Agronomy. The former, under Prof. H. F. Roberts, has done more work in this line than any other station in America, while the latter has distributed during the past year a total of over 7500 bushels of improved seeds of corn, Kafir-corn, wheat, oats, barley, broom-corn, sorghum, flax, millet, and cow-peas. The work of the Horticulture Department has been much broadened by an act of the legislature, passed in February, 1909, turning over to the College the former experimental State plantations of forest trees at Ogallah and Dodge, and by the establishment of a State forester's office at the College. At their April meeting of the present year the Regents elected Prof. Albert Dickens, of the Horticulture Department, to fill this important office.

The last State legislature gave an impetus to the work of the College Extension Department by raising the appropriation for this purpose to \$25,000 for the year 1909-'10, and \$27,500 for the year 1910-'11, and by passing a law authorizing counties having an institute organization to appropriate \$50 to the institute and an additional \$15 for each local institute held during the year. Supt. J. H. Miller reports that in 1905 there were but 13 permanent farmers' institutes in the State, while in May, 1909, 103 of the 105 counties had permanent organizations for this purpose, and that the total membership reached 6500.

At the time of Pres. Geo. T. Fairchild and Pres. Thos. E. Will, the College made several unsuccessful attempts to hold large gatherings of farmers at Manhattan during the winter holidays, but in 1906 Supt. J. H. Miller succeeded in making a six-days' institute a success, and since that time such State gatherings have been held annually. A very successful State institute, having an attendance of several hundred, was held last winter. In fact, the State Farmers' Institute at the College has grown to be the biggest agricultural event in the State.

In connection with these annual gatherings of farmers at the College the department has organized several auxiliaries, such as a five-days' judging school for corn, stock, poultry, etc., a Boys' Corn-Contest Association (1906), a Kansas Corn-Breeders' Association, an Institute Officers' Conference, a State Draft-Horse Breeders' Association, a Swine-Breeders' Association, and a Sheep-Breeders' Association. Most of these auxiliaries of the

State Farmers' Institute have held meetings regularly for the last four years.

In 1907 the department began the publication of two series of pamphlets, one for institute members and the other for public-school teachers. These were printed in such quantity that they could be supplied to all institute members and to all teachers who would ask for them. The following pamphlets have been issued to date:

The Soil.....	J. T. Willard
How Plants Feed and Grow.....	J. T. Willard
Hygienic Cookery.....	Henrietta W. Calvin
Tree Culture.....	Albert Dickens
Bird Life.....	T. H. Scheffer
A Corn Primer.....	C. S. Knight
A Study of Insects.....	T. J. Headlee
Boys' and Girls' Contest.....	J. H. Miller
Swine.....	Geo. C. Wheeler
Farm Dairying.....	D. M. Wilson
Poultry.....	D. M. Wilson and W. A. Lamb
Sheep.....	R. J. Kinzer
Demonstration Problems.....	J. H. Miller
Dry-Land Farming.....	A. M. Ten Eyck
Making Hay.....	A. M. Ten Eyck
Plant Breeding.....	Geo. F. Freeman
Insects Injurious to Farm Crops.....	Geo. A. Dean

These pamphlets, many of which contain over a hundred pages of printed matter, were issued under different general titles, but since July, 1908, all have appeared as numbers of a new publication: *Agricultural Education*. In addition to these seventeen pamphlets, Supt. J. H. Miller has published two interesting biennial reports.

THE Y. M. C. A. BUILDING.

Among the auxiliaries added to the College during the past year stands prominently the erection of the Young Men's Christian Association building. The movement for a Young Men's Christian Association building was publicly inaugurated May 22, 1904. On that day Mr. E. T. Colton, of the International Committee of the Young Men's Christian Association, made an eloquent appeal for an association building at a mass meeting of the young men of the College. Nearly \$6000 was pledged by the students and teachers, and by the close of the term \$3000 more was added. The average student gift at this time was about \$40. During the next year \$5700 more was subscribed by the students, so that altogether over \$11,000 was pledged by students alone. This heroic giving was not being done by wealthy students, but for the most part by young men earning their way through College. Thirty-six of them gave \$100 apiece. It is difficult to estimate the amount of sacrifice that the students put into this movement.

During the summer of 1904 a canvass was carried on among the alumni, who also responded liberally. In the fall, invitations were sent out to the business men of the city, asking them to a banquet at the Hotel Gillett. Fifty-five of the most prominent business men of Manhattan responded. H. M. Beardsley, of Kansas City, was present and made an address concerning the need for and purpose of an association building. A deep impression was made by his excellent talk, and about \$2500 was added to the growing fund.

On February 17, 1905, an offer of \$1000 was made through the International Committee of the Y. M. C. A., by an unknown philanthropist in the East, provided the association could raise \$5000 more in three months. This offer stimulated giving to a great extent and the \$5000 was raised.

The amount subscribed at the time when the building was started was about \$28,000, and its total cost, when it was finished in 1908, was nearly \$35,000.

It is but justice to state that much credit for the success of the Young Men's Christian Association in erecting this magnificent home is due to Secy. Willis W. McLean of the organization, who devoted several years to the realization of the project, and to Pres. E. R. Nichols, who was the financial agent of the enterprise.

PRESIDENT ERNEST R. NICHOLS.

As far as the information of the writer goes, the 30th of June of the present year will mark the end of the presidency of Prof. Ernest R. Nichols, and it is proper that he should say a few words about the man who stood at the helm of the institution during the most prosperous period which it has seen.

Professor Nichols, B. D., came to Manhattan as professor of physics in 1890 and was elected president in 1900, after having occupied the executive chair as temporary executive for one year. His election to the presidency was an acknowledgment of his faithful and effective services as acting president. No other selection could have been made that would have been received so well. This was the more the case because he never sought the honor. He had reluctantly accepted the appointment the year before with the understanding that he would be permitted to leave the executive office for his physical laboratory as soon as a capable man could be found, but his management of the affairs of the College had been so satisfactory that the Board, as well as the Faculty, had looked to him as the right man for the place, and had urged him to accept the responsible position.

President Nichols was born at Farmington, Conn., and raised

on a farm in northeastern Iowa, where he received his elementary education in the country schools. He taught in district schools one year and graduated from the Iowa State Normal, receiving the degree of Bachelor of Didactics in 1882. He then became principal of Charles City (Iowa) high school in 1882-'83 and superintendent of Nashua (Iowa) public schools in 1883-'84. After teaching for several years he entered Iowa State University, receiving the degree of Bachelor of Science in 1887 and Master of Arts in 1890. In 1887-'90 he was assistant professor of mathematics in Iowa State University. In 1888 he was married to Miss Marguerite Rae, of Chicago, a graduate of the Iowa State Normal. In 1890 he was elected professor of physics, Kansas State Agricultural College. In 1894 he was granted a leave of absence from June, 1894, to September, 1895, to pursue graduate work in physics and mathematics at the University of Chicago. He then re-entered his former chair at the College.

President Nichols passed step by step through every phase of public education and rose from a farmer boy to president of a technical college. By his own exertions he became a man of experience, character, and tact, a man that had the full confidence of the students and his collaborators, a progressive man and a scholar.

At their March meeting in 1908 the President placed his resignation in the hands of the Board, requesting that a successor should be elected before July, '09. The reasons for his retirement from the executive chair were not apparent to the outsider. There had been some complaints that he was unfriendly toward certain departments, but no definite charges had ever been made. It was urged in some quarters that the College needed an orator in its executive chair, a spellbinder who would be ready to speak at all times and all occasions, though he had never failed to express his opinion positively and forcefully when conditions demanded it. His resignation was a surprise to the Faculty and the students, and has not been explained to this day. It was generally considered a great loss to the College, for he possessed many of the elements of the ideal college president, and in one he surpassed all of his predecessors: he was a scientist and could appreciate the value of science as an educational and cultural factor; he knew how to obtain scientific results by experiment; he could distinguish valuable experimental work in the field and laboratory from mere tinkering and sham work, and he was an uncompromising enemy of the latter. His directing influence during the period of growth of the College from a scientific high school to a real technical insti-

tution of high rank was invaluable and will be felt for years to come.

President Nichols never lost sight of the available resources of the College, and was the first president in the history of the institution who closed the accounts at the end of each fiscal year without a deficit. When President Denison resigned the College must have been in debt to the amount of over \$30,000; at the end of President Anderson's regime there was a floating debt of some \$6000. An equal deficit was inherited by President Will, and he increased it nearly \$15,000. President Nichols never tolerated an actual deficit on the books. This firm stand against making expenditures when there was low ebb in the treasury was the cause of occasional disagreements with department heads, but he remained firm and saved the College the trouble and humiliation of appealing to the legislature for covering existing deficits.

The decade from 1899 to 1909, during which Pres. E. R. Nichols stood at the helm of the College, was one of intense growth, constant shifting of interests and readjustment of means. When he came to Manhattan nineteen years ago as professor of physics the institution had about five hundred students; when he became president it had less than nine hundred, and when he resigned it had way above two thousand. He raised the requirements of admission and the standards of graduation. He multiplied the courses of study. He convinced the legislature that the College must be supported by liberal State appropriations. He fought all attempts to divide the institution or to consolidate it with the State University. He organized the extension work on a large scale, erected buildings, bought land, quelled factions among the Faculty and dissensions among the Board, and through all of this growth and changing and shifting he was the same steady and sturdy pilot—not verbose, but effective—never wavering, but always keeping in sight the interests of the students and the purpose and future of the school.

J. D. WALTERS.

The Y. M. C. A. at Cascade.

The Y. M. C. A. delegates, twenty strong, left last Monday for their outing at Cascade, Colo. They had a private tourist car for the entire trip, thanks to the generosity of W. S. Elliott, of Manhattan, who paid for the car. Those who went were: William Davis, E. C. Bascom, H. Deaver, F. H. Shriner, Ray Berger, E. A. Ostland, C. R. Wears, John Anderson, Mitchell, Hanson, Wiltse, Totten, Kiene, Feary, P. G. Davis, Hull, Walcott, Creel, Meyer, and Hawley.

Local Notes.

The fall term will open September 23.

Prof. J. C. Kendall went to Great Bend last Tuesday on College business.

Regent Edwin Taylor was here this week looking over the financial records of the College.

Doctor Schoenleber gave a reception to the senior veterinarians and the instructors of the department Friday night of last week.

The *Students' Herald* of June 9 publishes the amended and revised constitution and by-laws of the College Athletic Association.

Mr. P. E. Crabtree, assistant in the College Extension Department, will start next Monday for Old Mexico, where he will spend about three weeks traveling about the country.

The Domestic Art Department will have on exhibition work done by students during the spring term on Wednesday and Thursday, June 16 and 17. All are cordially invited to inspect same.

The Department of Architecture and Drawing has made arrangements for an exhibition, during Commencement Week, of some of the work of the different classes. The exhibit will be found in Miss Weeks' class room.

Superintendent Miller, who has returned from the wheat train institute circuit along the Santa Fé Railroad in southwest Kansas, reports the venture as a big success. The total attendance at the institute series was 6304 persons.

G. D. Noel, a senior agricultural student, already has a good position awaiting him. He will go to Brookings, S. D., July 1, to take a position as assistant in cereal investigation at the State Agricultural College, which is located at Brookings.—*Students' Herald*.

E. Dana Trout, secretary in the Agronomy Department, and Miss Hazel Harris, a student in College last winter, surprised their friends this week by announcing their marriage. The young people will move into their new home on Bluemont Avenue as soon as it is completed.

In chronicling the victory of the track team at the State meet the editor stated that this was the third victory in six years. He should have said the third victory in four years, as the track team has only once failed to win the meet since the forming of the Kansas Intercollegiate Athletic Association.

On the afternoon of Commencement Day the second annual baseball game between the College team and an alumni nine will be played. The game last year was very close, and the members of the alumni team this year declare they will win. This game will probably prove the most popular of the season.

Volume 1, Number 1, of the Royal Purple, the year-book of the graduating class, was delivered to the ticket holders this week. It is a large and handsome volume of class reminiscences, half-tones of the class and Faculty, College statistics, and "happy hits," and compares well with its predecessors.

Pres. E. R. Nichols and Regent W. E. Blackburn were in Chicago this week looking up teachers for the different departments that will have vacancies to fill for the coming year. They also inspected a number of greenhouses and gymnasiums with the view of obtaining ideas and plans that might be used here.

In the individual field meet in Athletic Park a week ago last Tuesday, Pyles, a colored student, won the first honors. He scored over 300 points, 25 points ahead of Christian, who won the meet last year. Christian, however, was not permitted to enter more than three of the eight events. Bentley came out third in the meet. To the winner of the meet will go the silver loving cup, the gift of Mr. Emil Pfuetze, of Manhattan.

Regent Taylor, Professor McCormick and Director Webster met at Hays Monday and let the contract for an office building for the Hays Branch Station and a bridge connecting a portion of the farm on the east side of Big creek with the main farm and the stables and yards. The office is to be built of brick, with cement floors, and will be practically fire-proof. Mr. Baker, of Hays City, secured both contracts. Work will begin at once.

The new Engineering Hall has received another boost. The building committee of the Board met last week to open the bids for its completion, and Henry Bennett, the well-known contractor of Topeka, was awarded the contract over four other bids. Mr. Bennett's bid was \$44,394, just \$18 less than the bid of Stingley Bros., his nearest competitor. The original contract for the construction of the building was let to the Blanchard Construction Company, of Topeka, which, after completing the foundation walls, went into bankruptcy. Mr. Bennett built the Auditorium, the Veterinary Science Hall, the south and north wings of Anderson Hall, and others of the College group of buildings.

The Manhattan street railway was publicly inaugurated by a procession of the cars going over the line from the Union Pacific depot to the corner of the College campus last Thursday afternoon. The front car was occupied by the members of the city council and their wives, the police force, and a number of Mr. West's personal friends. The second car carried the Manhattan Cornet Band, which played patriotic airs and selected quicksteps. The cars were decorated with bunting and flags, the people shouted, the gongs rang, and the cars deported themselves to show what they could do. Everybody felt that it was a red-letter day for the city, a day that marked the passing away of the frontier village at the confluence of the Blue and Kaw and the beginning of a real city, bustling and pulsating with modern life. —

The seniors, as guests at the domestic science reception rooms last Saturday evening, were royally entertained by the members of the junior class. A short play, written and presented by the juniors, proved entertaining. It was entitled, "The Seniors Suspended," and was an account of the trials of certain senior girls who had gathered into a dormitory to live under the espionage of a member of the Faculty. Their troubles in giving their studies proper attention was laughable.

Two weeks ago the INDUSTRIALIST contained the sad news of the death of Ex-Regent A. P. Riddle, of Minneapolis. Another ex-member of the Board was laid to rest last Saturday. T. P. Moore, president of the First National Bank, of Holton, Kan., died at his home of acute indigestion. He became ill in Kansas City Thursday, but was able to go home in the evening. His condition was not regarded as serious till 5 o'clock in the morning. Two hours later he died. Mr. Moore was a native of Morgan county, O. He went to Holton in 1872 and, with the late S. K. Linscott, started the first bank of Jackson county and had been in the banking business ever since. He leaves a widow and four children. Mr. Moore was a Regent of this College from 1885 to 1893 and had many warm friends at the College and in Manhattan.

Alumni and Former Students.

Roy H. Clark, '07, substation operator for the Commonwealth Edison Electric Company, Chicago, gave a talk to the electrical students one morning this week.

W. P. Tucker, '92, and Stella (Kimball) Tucker, '94, are about to take up their residence in Humboldt, Arizona, where Mr. Tucker will serve as chief clerk for a smelting company.

J. W. Berry, '83, has the contract for the construction of a new school building in Jewell. Mr. Berry has been a member of the school board for many years, and in order to accept this contract was obliged to resign. Any who are acquainted with Mr. Berry's character and the quality of his work know that there is no graft in this transaction.

W. J. Lightfoot, '81, United States Examiner of Surveys, has been taking a few days off and visiting his family. Mrs. Lightfoot on the evening of the 8th invited in a considerable number of their old-time friends, mostly former College students or graduates, who thus spent a very pleasant evening recalling old associations and acquaintances.

Geo. T. Fielding, Jr., '03, gave an illustrated lecture before the engineering students, Thursday, on "Modern Developments in Electrical Engineering." Mr. Fielding is filling a responsible position in the power and mining department of the General Electric Company, Schenectady, N. Y. He with his wife is visiting the College and his parents and friends during the Commencement season.

Geo. E. Hopper, '85, has been awarded the contract for the construction of the Marshall Theater building, which is to be one of the finest structures in the city, accommodating not only the theater proper, but several commodious storerooms and offices. It will be located across the street east of the Gillett Hotel.

Changes of address: Mamie Hassebroek, '04, 620 Poyntz Avenue, Manhattan, Kan.; A. J. White, '74, 1084 Harrison street, Chicago, Ill.; A. H. Wright, '08, Fowler, Kan.; Myrtle (Harrington) Deibler, '91, 135 East 10th street, Grand Junction, Colo.; Kate (Paddock) Hess, '00, 2315 Lawn, Kansas City, Mo.; E. S. Adams, Ft. Douglas, Utah; W. L. Harvey, '02, R. F. D. No. 1, care of Ben. Kessler, Topeka, Kan.

E. A. Wright, '06, and Augusta Amos, former student, were married at the home of the bride in this city Monday, June 7, at 10:00 A. M. The ceremony was performed by the Reverend Doctor Bright, of the Methodist church. A pleasing feature of the occasion was the rendition of the Bridal Chorus from Lohengrin by Laura Lyman, '06, Grace Smith, '08, and Florence (Sweet) Evans, '07, who with Miss Amos had made up the Cueer Cuartette.

Ernest Fox Nichols, '88, professor of experimental physics in Columbia University, has been elected President of Dartmouth College. This is certainly the highest academic honor that has fallen upon any of the alumni, and those who met Professor Nichols last year and heard his scholarly and thoughtful address before the alumni will realize that Dartmouth has secured a polished and able president, while Columbia has lost a brilliant investigator.

A quiet wedding occurred Wednesday, June 2, at the home of Mr. and Mrs. W. W. Groome, when their daughter, Miss Blanche Groome, was united in marriage to A. C. Ferris. Only the immediate relatives witnessed the ceremony. Miss Groome and Mr. Ferris became acquainted with each other when they were students of K. S. A. C., about three years ago. He graduated from the electrical engineering course in '06, after which he was with an electrical company in Chicago, and is now located at Syracuse, N. Y. They departed Wednesday noon for their new home in Syracuse, where Mr. Ferris is manager of a telephone company.
—*Republic*.

College circles were sadly shocked by the news that Ethel Alexander, former student and sister of several graduates, with Walter West, of Phillipsburg, was drowned in Willow Gulch near Mattison, Colo., Sunday, June 6. They were caught in a cloudburst. Considerable difficulty was experienced in recovering the bodies. The funeral services of Miss Alexander were held at the residence of her parents in Manhattan Thursday evening. The interment was at Welda, Anderson county, the former home of the family. Miss Alexander was well known in this locality as a teacher and had recently gone to Colorado to live on a claim which she had taken.

Board of Instruction (concluded).

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(Board of Instruction concluded on last page.)

# THE INDUSTRIALIST

VOL. 35.

MANHATTAN, KAN., JUNE 24, 1909.

No. 32

## *The Narrative of Commencement.*

A typical June morning marked the opening of Commencement week. Though threats of rain were dark and insistent, nothing worse came of it than a scattering sprinkling, and the Auditorium was well filled for the baccalaureate sermon. This was delivered by the Rev. Benjamin Otto, pastor of the First Baptist Church, Kansas City, Mo. His theme was old yet ever new and treated of certain characteristics essential to an effective life. He restricted himself to three points, *i. e.*, the ability and willingness to do something, the spirit of self-sacrifice, and regard for the things that are eternal. The probability of failure because of lack of one essential, no matter how well prepared one might be on all other points, was emphasized, and the serious note struck was most fitting for those about to take up the responsible duties of life.

### FACULTY-SENIOR BASEBALL.

The American love of humor, and disposition to emphasize democracy by pulling people off their dignity, received its annual illustration in the Faculty-Senior baseball contest. This event occurred Monday afternoon, beginning about 1:00 o'clock, and, as last year, was played as a double header. The first game consisted of four innings and the contestants were professors on the one side, and the seniors' second nine on the other. The game was won by the seniors on a score of eight to three. While it was marked by numerous sensational plays, it hardly came up to the game of last year, when Professor Headlee surprised the seniors by his swift curves. While not quite up to form in his pitching this year, Headlee tapped the grand stand for the highest applause by a well-placed two-bagger which enabled President Nichols and Professor Hamilton to score. The second game was played by assistants against the best the seniors could put up, leaving out Haynes of the regular College team, and was won by the assistants, the score being 4 to 0. The startling way in which "Mike" rounded off the corner at first deserves special notice. The attendance was rather light, but all present felt that the exhibition was well worth the price of admission.



## THE INDUSTRIALIST.

## COMMENCEMENT RECITAL.

Monday evening the Music Department gave a pleasing recital, which was attended by a large audience. The following program was rendered:

|                                             |                 |
|---------------------------------------------|-----------------|
| a. Madame Butterfly .....                   | Puccini         |
| b. Hearts and Flowers .....                 | Tobani          |
| ORCHESTRA                                   |                 |
| Toreador Song (Carmen) .....                | Bizet           |
| JOHN Z. MARTIN AND ORCHESTRA                |                 |
| Hark, Hark the Lark .....                   | Schubert-Liszt  |
| MARY AUSTIN                                 |                 |
| Rustle of Spring .....                      | Sinding         |
| MYRTLE OSKINS                               |                 |
| Fantasie Ballet, Op. 100 .....              | De Beriot       |
| R. R. HAND                                  |                 |
| Marche Militaire .....                      | Schubert-Tausig |
| EDNA JONES                                  |                 |
| Invitation to the Dance .....               | von Weber       |
| WINIFRED NEUSBAUM                           |                 |
| Silver Spring .....                         | Mason           |
| MARIE COONS                                 |                 |
| a. Nocturne Op. 9 No. 2 .....               | Chopin          |
| b. Polonaise Militaire .....                | Chopin          |
| FLORINE FATE                                |                 |
| Oh, Robert, Robert (Robert Le Diable) ..... | Meyerbeer       |
| ESTA HUNGERFORD                             |                 |
| Polonaise in B .....                        | Paderewski      |
| IRENE INGRAHAM                              |                 |
| Sixth Rhapsodie .....                       | Liszt           |
| EUGENIA FAIRMAN                             |                 |
| Calm as the Night .....                     | Götze           |
| CLARE BIDDISON                              | H. E. PORTER    |

The various numbers were all well rendered and showed the results of persistent industry on the part of the performers and of patient care by the instructors. As one's appreciation of music depends on education, personal temperament and the mood of the hour, the writer will make no invidious comparisons. Suffice to say that the work of the Music Department, as shown by results, is of a high order, and the recitals offered the public from time to time are growing constantly in public favor.

## THE SENIOR PLAY.

Following the custom of several years past, the senior class presented a play Tuesday evening. The selection this year was "A Count of No Account," a farce filled with humorous, even though impossible, situations. The actors played their parts with enthusiasm and the occasion afforded much pleasure to the audience, which filled nearly every seat in the Auditorium. Amateur theatricals are not to be judged by the same standards as professional work. The class is to be commended for its choice of a

play of a humorous character rather than one more ambitious in aim. The little slips are less noticeable, and an audience is always better satisfied in being amused than in having the deeper feelings harrowed up. In this play, too, there was opportunity for several to show their abilities instead of keeping but one or two before the footlights most of the time. The actors satisfied their auditors, had a grand time themselves, and the event will be remembered as one of the best of its kind.

#### EXAMINATIONS.

The final examinations for the term occupied the entire day Tuesday and the forenoon of Wednesday. This continuation of our College work up to Commencement Day is in striking contrast with the practice in vogue in many other institutions, in which the work of the college practically closes a week before Commencement Day. Bringing the Commencement exercises the next day after the conclusion of the academic work enables all of our students to witness them, if they so desire, without the apparent loss of a week's time.

#### THE ALUMNI.

The business meeting of the Alumni Association was held Wednesday afternoon at 2:30 and was attended by about seventy graduates. The new officers elected were: R. J. Barnett, '95, president; D. G. Robertson, '86, vice-president; Ina Holroyd, '97, secretary; Albert Dickens, '93, treasurer. The question of a new constitution designed to strengthen the organization was discussed at some length and a committee appointed to draft a new constitution with this object, a feature to be included consisting in a provision for the election of officers by mail. The general feeling seemed to be that annual dues should be collected and that active participation in the business of the association should be limited to those whose dues are paid. In this way the graduates who are interested in doing things would be enabled to accomplish something. A proposal to amend the constitution will undoubtedly be submitted at the next annual meeting. A resolution was adopted requesting the Board of Regents to locate the Athletic Field on the College Campus. Another resolution suggested to the Board of Regents the propriety of embodying the name of President Nichols in the name of the gymnasium and armory about to be erected.

In the evening a reception was held under the auspices of the Manhattan Association, in the Domestic Science reception rooms, refreshments being served in an adjacent lecture room. The attendance was probably between one hundred fifty and two hun-



dred. The occasion was entirely informal and every one present seemed in thorough enjoyment of it. The visiting alumni through Commencement week were too numerous for individual mention.

#### COMMENCEMENT DAY.

Commencement Day was rather warm, but otherwise was ideal. A good breeze alleviated the heat and scattering clouds beautified the sky. The Horticultural Department had put the campus and grounds in as nearly perfect order as the building operations in progress would permit, and ample rains had produced a wealth of verdure. The Auditorium was filled by about twenty-five hundred people. At ten o'clock the graduating class marched in, their numbers again breaking the record. One hundred twenty-five received their degrees that day, their names and the titles of their theses being given elsewhere, and several others will complete the course within the calendar year and be ranked with the class of 1909. The following program was given:

March—"Garde du Corps,"... *Chambers*  
Selection—"Largo,"... *Handel*

#### COLLEGE ORCHESTRA

#### Prayer

REV. O. B. THURSTON

#### Announcements

Selection—"Pagliacci,"... *Leoncavallo*

#### ORCHESTRA

Annual Address....."The Scholar in a Commercial Age"

DR. SHAILER MATHEWS, D. D.,

Dean of Divinity College, University of Chicago

#### Address

GOVERNOR STUBBS

Chorus—"Sing Alleluia Forth,"... *Buck*

#### CHORAL UNION

#### Conferring Degrees

Alma Mater..... *H. W. Jones, '88*

#### THE AUDIENCE

#### Benediction

March—"Royal Purple,"... *Atherton*

#### ORCHESTRA

Doctor Mathews' address was a scholarly production which sounded a note too often lacking in institutions of this kind where appreciation of the practical is liable to obscure recognition of that the value of which cannot be measured so directly in dollars and cents. Doctor Mathews regards the work of the scholar as that of one who searches for the truth for its own sake and studies judiciously without reference to contemporary approval, criticism,

or clamor. He believes that the scholar has a high place in advancing mankind, even in material things, and that commercialism, with its undoubtedly valuable accomplishments, is to a large degree indebted to him. His appeal was for an adequate recognition of the fact that there are many men who will deliberately set aside money and goods in order to devote their lives to the acquisition and dissemination of truth as they see it, "To whom the kingdom of the spirit is higher than the kingdom of Mammon." He recognizes, moreover, that the scholar may be mistaken, that he is not necessarily wise, that he is subject to the frailties limiting humanity in general, but that in spite of this he is entitled to a decent maintenance and an opportunity for untrammelled expression.

Governor Stubbs honored the occasion by his presence and gave an impromptu speech following the annual address. He assured Dean Mathews that Kansas reformers are all right and universally approved. He has been attending the commencement exercises of the State and other educational institutions and expressed his keen appreciation of the high moral and religious influence apparent in all of them, and concluded by giving a glimpse of the opportunities in heathen lands for American zeal to render service in the uplift of humanity.

President Nichols then delivered the diplomas to the graduating class and to the four who received the master's degree. In a brief address he again reminded the class that the world was probably not anxiously waiting with a good place for each of them, but that they had their way to win. The education that they had received from the State and the Nation was not bestowed primarily because of the individual advantage it conferred, but that the State as a whole might profit thereby, and the responsibility of those who had shared this bounty was impressed upon them. Turning to the class more directly he spoke his farewell to them and to his own life as a College teacher and administrator after twenty-six years of work. These words were audible to but few of the general audience, but the situation was one of pent-up emotion to nearly every one.

Regent W. E. Blackburn, an old friend of President Nichols, then rose and said: "Speaking in behalf of the Board of Regents of this, the greatest industrial school in the world, I wish to call your attention to the wonderful growth which has been its portion during the past ten years, a period of time wherein the acreage of College lands, so essential to an institution of this nature, has increased a hundred per cent; the College equipment



has increased several hundred per cent; the buildings for College use doubled in number and increased six to ten times in capacity. Best of all, the young men and women of Kansas taking advantage of the opportunities here offered for higher education have increased one hundred and sixty-five per cent. As a fitting monument to this prosperous and eventful period and as a memento of the man who has been so great a factor in this growth and development, it has been ordered by the Board of Regents that the new Armory and Gymnasium given us by the last legislature shall be named and known as "Nichols Gymnasium." It has been said that what we give we get; that from the giving of self to the service of others there comes back to us more than we give, in what is really worth while. In the nineteen years he has been connected with this institution—nine years as professor of physics and ten years as President of the College—Mr. Nichols has given of his very best to the service of the College, to the student body, to the cause of education, and to the State in the growth and development of better men and women. From that constancy of effort, that consecration of self to ideals and to humanity, that giving out of wise counsel and kindly sympathy, there has come back to you, Doctor Nichols, even more than you have given, and in unanimous appreciation of it and of your scholarly attainments, of your faithful and most effective work in and for the College and for the students who have come under your direction, the Board of Regents has conferred on you the highest degree in its power to bestow, that of Doctor of Philosophy, which I now present you by its authority."

#### THE AFTERNOON EXERCISES.

At 2 P. M. the Auditorium was again nearly filled to listen to the band concert, the program for which was as follows:

|                                   |                            |
|-----------------------------------|----------------------------|
| Overture—"Haut Monde" .....       | <i>Rollinson</i>           |
| Trombone—"The Message" .....      | <i>Brooks</i>              |
| IRENE INGRAHAM                    |                            |
| Quartet—"Murmuring Breezes" ..... | <i>Round</i>               |
| GEO. ROSS                         | C. C. WOLCOTT              |
| F. G. POLLOM                      | RAY WHITNEY                |
| Waltz—"Pride of the Ball" .....   | <i>Verner</i>              |
| Cornet—"Grand Fantasia" .....     | <i>Perkins</i>             |
| GEO. SAVAGE                       |                            |
| Quartet—"Marche Militaire" .....  | <i>Schubert-Laurendeau</i> |
| M. COLLINS                        | V. C. DYATT                |
| V. FLORELL                        | B. O. WARREN               |
| Alma Mater .....                  | <i>H. W. Jones, '88</i>    |
| (Special Arrangement)             |                            |

Generous applause by the audience expressed approval of the rendering of this program, at the conclusion of which the usual exhibition of military drill and the sham battle took place on the campus. This was witnessed by a throng of people numbering thousands. This exhibition is always a popular one, and the work of the cadets was creditable to them and to their officers.

About 4 P. M. the College baseball nine contested with a picked nine from the alumni in one of the best games of the season in Athletic Park. The game was witnessed by a large crowd and the old favorites among the alumni were not without backing from the rooters, but the men in present training were too much for the alumni and the score stood 4 to 0 in favor of the College team. Three of the scores were made in the seventh inning and were largely chargeable to errors by the alumni. With the exception of this half-inning the game was high class throughout and was greatly enjoyed by the spectators.

So ended a Commencement that will always remain an important point in the history and development of the Kansas State Agricultural College.

J. T. WILLARD.

### *Class Roll and Theses.*

|                                                                                                                                      |                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Franklin Alexander Adams,<br>Electricity in the Household.                                                                           | Ella V Brooks,<br>The Home a Factor in Diminishing Death-rate from Tuberculosis.                              |
| M. Reuben Alleman,<br>Effect of Different Pasteurizing Temperatures on the Bacterial Content, Quality and Keeping Quality of Butter. | Frances Langdon Brown,<br>The Batavia System of Teaching.                                                     |
| Clyde Harrison Alspaugh,<br>Effect of Feeds on Hogs.                                                                                 | Anna Wilhelmina Carlson,<br>The Transient Character of the Student Body at Kansas State Agricultural College. |
| Jessie Edwina Apitz,<br>Two Years' High School Course in Domestic Science.                                                           | Florence Carpenter,<br>Influence of Food upon Children of School Age with Suggested Menus for School Lunches. |
| Ralph Armstrong,<br>Strength of Welds.                                                                                               | Sarah Elizabeth Cassel,<br>Emergencies in the Home.                                                           |
| Harold W. Bales,<br>Combining the Mallein and Agglutination Tests in Diagnosis of Glanders.                                          | George Sidney Christy,<br>Duroc-Jersey Prepotency.                                                            |
| Edward E. Bealey,<br>Small Fruits on the Farm.                                                                                       | Edna E. Cockrell,<br>Food Sanitation.                                                                         |
| Robert E. Berkeley,<br>The Quantitative and Qualitative Bacteriological Analysis of the Manhattan City Water.                        | Claude S. Conner,<br>The Action of Various Preservatives upon Hog Cholera Virus and Hog Cholera Vaccine.      |
| Casey C. Bonebrake,<br>Design of a Power Plant for the City of Stockton, Kan.                                                        | M. Marie Coons,<br>The Public Library Movement in America.                                                    |
| Charles Joseph Boyle,<br>Hay and Soiling Crops.                                                                                      | Margaret Copley,<br>The Art of Right Living.                                                                  |
| Raymond W. Brink,<br>Some Recent German Fairy Tales. A Translation.                                                                  | James Scott Daniels,<br>The Origin and Fundamental Doctrines of Six Protestant Churches.                      |



Leon Milhame Davis,

Effect of Different Pasteurizing Temperatures on the Bacterial Content, Quality and Keeping Quality of Butter.

Ruby Fae Deaver,

Inquiry into the Matter of Student Failures.

Lulu Holmes Docking,

Inquiry into the Matter of Student Failures.

William L. Enfield,

A Comparative Test of Transformers.

Wilma Dette Evans,

Outline of a Year's Work in Domestic Science in a High School.

Marie Fenton,

A Living Temple.

Donald Forrest Foote,

Comparative Tests of Transformers.

Minnie L. Forceman,

Domestic Art as Taught in Schools.

Ambrosio Gison,

Adaptation of Some Crops to Particular Soils.

Roy R. Graves,

A Study of the Retail Milk Supply of Ottawa, Lawrence, and Kansas City, Kan.

Chester W. Grizzell,

Some Cardiac Stimulants.

Charles Meyers Haines,

Tests of Lubricants and Bearing Metals.

James William Harner,

Surgical Bacteriology and Efficiency of Disinfectants.

Fritz F. Harri,

Teaching the Boy to Save.

Annie A. Harrison,

Lectures to Accompany Domestic Science Demonstrations at Chautauquas.

Stella Hawkins,

Lectures to Accompany Domestic Science Demonstrations at Chautauquas.

Lawrence Glenn Haynes,

Design of a Power Plant for the City of Stockton, Kan.

Alice Mabel Hazen,

The Designing and Equipping of Domestic Science Laboratories.

Geneva L. Henderson,

Fireless Cookery. With Special Attention to Roasting and Baking.

Thomas Newton Hill,

Quantitative and Qualitative Bacteriological Analysis of Manhattan City Water.

Jesse T. Hirst,

Tests on a Smith Gas Producer.

Vera E. Holloway,

Outline of a Two-Year's Course in Domestic Art for High Schools.

Charles Clinton Howenstine,

Comparative Tests of Transformers.

Grace Gertrude Hull,

Lectures in Domestic Science for the High School.

Oliver William Hunter,

The Germicidal Action of Potassium Permanganate with Reference to Bacillus typhosus and Bacterium anthracis.

Edith Belle Ingham,

Six Lectures for Chautauqua Demonstrations.

William H. Irving,

Tests on Copper-Clad Wire.

Edith Ellen Jones,

Dietary Studies from an Economic Standpoint.

Elmer W. Jones,

Illumination Tests.

Margaret M. Justin,

Agar; the Possibility of Substituting it for Gelatin in Household Cookery.

Nobuzo Kawai,

Construction of a Modern Sanitary Barn.

Ada Kennedy,

Growth of the Home Economics Movement.

Harry E. Kiger,

Comparison of the Weights and Ages of Cattle.

Loyd L. King,

Tests on Copper-Clad Wire.

Walter J. King,

Tests with Traction Dynamometer to Determine Effect of Width of Tires.

William Arthur King,

The Fifty-eighth Congress—Its Personnel, Organization, and Acts.

Carl L. Kipp,

Illumination Tests.

Albert G. Kittell,

Determining a Young Man's Vocation.

Amanda C. Kittell,

Dietary Studies from an Economic Standpoint.

David A. Kratzer,

Efficiency Tests on Pipe Coverings.

Edison Frank Kubin,

Combining the Mallein and Agglutination Tests in Diagnosing Glanders.

Grace E. Leuszler,

Lunch Rooms in High Schools.

Joe Grigsby Lill,

A Study of the Effect of a Leguminous Crop on the Soil and on the Crops Following.

Edward A. Logan,

Some Cardiac Stimulants.

Gertrude Muriel McCheyne,

The Preparation and Equipment Needed for Demonstration Lectures in Domestic Science, Including Six Lectures with Practical Demonstrations.

John E. McCoy,

Relative Value of Some of the Common Anaesthetics.

J. Myron McCray,

The Germicidal Action of Potassium Permanganate with Special Reference to *Bacillus dysenteriae* and *Bacterium diphtheriae*.

Preston Essex McNall,

Electricity in the Household.

Eleanor March,

Influence of the Library on a Community.

John Edward Martin,

A Comparative Study of the Existing Methods of Isolating *Bacillus typhosus* from Water.

F. Herman Mayer,

Test on 150 K. W. General Electric Alternator, Form D.

Virginia Lee Meade,

Fireless Cookery, With Particular Attention to Roasting and Baking.

Peter J. Meenen,

Mucoraceæ, and Some of Their Effects upon Domestic Animals.

Francis Burzley Milliken,

Stored Grain Insects.

Claude Moorman,

Swine Industry.

Ross Moorman,

The American Mule and Its Ancestors.

Grace Morris,

The Plan of a Year's Work in Domestic Science for Students Above Sixth Grade.

Effie May Morrow,

The Value of a Manual Training Education.

Elizabeth Lovinia Morwick,

The Social and Political Reconstruction of the South since 1861.

Margaret Ethel Moseley,

Outline of One Year's Work in Domestic Science for High Schools of Kansas.

Guy D. Noel,

Some Experiments in Crop Rotation.

John W. Norlin,

Sheep Industry.

Victor F. Oblefias,

A Comparative Study of the Methods of Rice and Tobacco Culture in the United States and the Philippines.

Victor Emanuel Oman,

Test on 150 K. W. General Electric Alternator, Form D.

James Oliver Parker,

Rural Electric Lighting.

John Howard Payne,

The Relative Value of Some of the Common Anaesthetics.

Vernon Peachey,

Tests on the Witte Gas Engine.

Claro Pendon,

Some Experiments in Crop Rotation.

Harold Albert Pennington,

Classification of Kansas Apples.

Hubert L. Popenoe,

The Sheep Industry.

Lulu Moore Porter,

A Young Woman's Preparation for Her Life Work.

Leaffa Laura Randall,

Teaching Girls to Work.

Harold S. Records,

A Buttermakers' Dairy Institute.

Ernest Carl Reed,

Illumination Tests.

John A. Richards,

Tests with Traction Dynamometer to Determine Effect of Width of Tires.

Ida Ethel Rigney,

A Two-Year High School Course in Domestic Science.

Eugene M. Ruede,

Conditions Effecting the Accuracy of Wattmeters.

Alvertis Santford Salkeld,

Advantages of the Single Phase A. C. Motor over the Series D. C. Motor for Railway Work.

George Arthur Savage,

The Farm Orchard.

Hugo Schild,

Rural Electric Lighting.

Susanna Schnemayer,

The Development of Manual Training.

Minnie Schorer,

The Purpose of Calorimeters.

Kathleen Selby,

Comparative Tests of Fuels for Household Purposes.

William Linley Shelly,

The Sanitation of Farm Barns.



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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Elva Lucretia Sikes,<br/>Sanitary Plumbing for a Country Home.</p> <p>Myrtle Simpson,<br/>The Transient Character of the Student Body at Kansas State Agricultural College.</p> <p>Alice Skinner,<br/>The Plan of a Year's Work in Domestic Science for Students Above Sixth Grade.</p> <p>Roy E. Spriggs,<br/>Strength of Welds.</p> <p>Effie Eleanor Steele,<br/>Comparative Tests of Fuels for Household Purposes.</p> <p>Leora Juanita Sutcliff,<br/>The Cost of a Year's Living for a Family of Four.</p> <p>Merritt Rex Tinkham,<br/>The Influence of the Intravenous Injection of Hog Cholera Virus upon the Histological Structure of the Blood of the Normal Horse.</p> <p>Alonzo Frederick Vass,<br/>Insects Injurious to the Growing Wheat Plant.</p> <p>Alberta M. Wenkheimer,<br/>The Instruction of Children in Relation to Fear.</p> <p>Francis Buckner Williams,<br/>Classification of Kansas Apples.</p> <p>Marie Williams,<br/>The Development of the Modern House Plan and Color Decoration.</p> <p>Marion Williams,<br/>The Cost of a Year's Living for a Family of Four.</p> <p>Chloe May Willis,<br/>The Coöperation of Parents With the Work of the School.</p> <p>Robert Hugh Wilson,<br/>A Study of Some Recent Outbreaks of Hog Cholera.</p> | <p>Henry B. Winter,<br/>A College Administrative Hall.</p> <p>Roy Milton Wyatt,<br/>Plans and Specifications for a Public Library.</p> <p>Carrie V. York,<br/>The Cost of a Year's Living for a Family of Four.</p> <p>James Walter Zahnley,<br/>The Problem of the Town or City Boy's Vacation Period.</p> <p>Mabelle (Howell) Zahnley,<br/>Lunch Rooms in High Schools.</p> <p style="text-align: center;">GRADUATES OF THE CLASS OF 1908.<br/>(Completing their work by December 31, 1908.)</p> <p>John Buell Peterson,<br/>The Development and Improvement of Corn for the Practical Farmer of Kansas.</p> <p>Genevieve Louise Riddle,<br/>Preparing Fruit and Vegetables for Winter Use.</p> <p>Frances Odell Wilson,<br/>Should the Young Woman Try to Earn Her Way Through College?</p> <p style="text-align: center;">GRADUATE.</p> <p>Harry V. Harlan<br/>Suggestions for the Rapid Improvement of Small Grains.</p> <p>Arthur H. Helder,<br/>The Application of Landscape Principles to Some Lawn Problems.</p> <p>Adah Lewis,<br/>The Production of Ethyl Acetate in Cider Vinegar.</p> <p>Atsushi Miyawaki,<br/>The Characteristics of Milk with Special Reference to its Acidity.</p> |
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### ***President Nichols Honored.***

A man who had given the best nineteen years of his life to his college, who was a prime factor in its growth from a few hundreds of students to thousands of them, whose every thought for all these years was given to making this college a bigger, a nobler institution, bade it farewell yesterday. His work continues yet a while, but his farewell has been spoken. When the voice of the kind, strong, silent man broke slightly, the eyes of many were filled with tears, and those who had never thought before now knew how deeply his heart and soul were in the work he had been doing. They felt the force of that great spirit which had best expressed itself in the college he had reared.

When Chairman Blackburn of the Board of Regents announced that the new building would be called "Nichols Gymnasium" whole-hearted cheers broke from the vast audience, and when he further announced that they had given him the highest honor it was within their power to bestow, and, because of the work he had done, had conferred upon President Nichols the degree of Doctor of Philosophy, a great burst of applause swept through the Auditorium and the College boys called out "Hip, Hip, Hurrah! Nichols!"

So it was with mingled smiles and tears that the final farewells were spoken and President Nichols gave his students his benediction: "Good-bye, God bless you." And as the audience was dismissed old students and graduates from everywhere crowded the platform to shake the president's hand and bid him "God speed." It really seemed to be the great hour of triumph in all the long nineteen years, and the reward of the strenuous ten years as head of the College. The long fight was over, and though he leaves the College his work and his glory are written large in the great buildings and in the thousands of students throughout the land. The fight was over, the bitterness gone, and only the tribute due to a great man for a great work was his yesterday, and there are no detractors now.—*Republic*.

### ***Graduates from the Kansas State Agricultural College.***

The number graduating from an institution is an important criterion touching its growth. With the increasing specialization of courses that has been going on here for the past twelve years there appears the interesting question of the drift of students in response to the several options presented. The following table shows this in broad outlines:

| COLLEGE YEAR ENDING: | Men.         |                |                  | Women.           |                   | Totals. |
|----------------------|--------------|----------------|------------------|------------------|-------------------|---------|
|                      | Agriculture. | Mechanic Arts. | General Science. | General Science. | Domestic Science. |         |
| 1900.....            | 9            | 5              | 18               | 16               | 10                | 58      |
| 1901.....            | 8            | 3              | 19               | 18               | 12                | 60      |
| 1902.....            | 11           | 5              | 17               | 5                | 14                | 52      |
| 1903.....            | 15           | 10             | 10               | 7                | 13                | 55      |
| 1904.....            | 23           | 23             | 20               | 6                | 30                | 102     |
| 1905.....            | 29           | 20             | 15               | 1                | 42                | 107     |
| 1906.....            | 20           | 27             | 16               | 7                | 26                | 96      |
| 1907.....            | 38           | 35             | 6                | 6                | 33                | 118     |
| 1908.....            | 21           | 31             | 9                | 6                | 46                | 113     |
| 1909.....            | 35           | 29             | 11               | 5                | 45                | 125     |
| Totals.....          | 209          | 188            | 141              | 77               | 271               | 886     |



The figures show that the agricultural group of courses leads that of the mechanic arts by about ten per cent, while nearly three-fourths of the young women have completed the domestic science course. The total of those credited to the general science group, including both men and women, is 218, but in recent years the proportion taking that course has much diminished. In 1900, 58.6 per cent were graduated from that course, while in 1909 they made but 12.8 per cent. This shows the tendency toward the special technical courses.

### *Actions of the Board.*

The Board made some changes in the grouping of departments and created one new division to be under the dean of science. The titles of deans with the grouping of departments follows:

| Dean of College and Assistant to the President.                                                                                                 | Dean of Science.                                                                  | Dean of Agriculture and Director.                                                                                                                       | Dean of Mechanic Arts.                                                                                                   | Dean of Women.                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| English.<br>German.<br>Mathematics.<br>Architecture.<br>History.<br>Economics.<br>Philosophy.<br>Music.<br>Phys. Training.<br>Military Tactics. | Chemistry.<br>Physics.<br>Botany.<br>Entomology.<br>Bacteriology.<br>Mathematics. | Agronomy.<br>Ani. Husbandry.<br>Dairy Husbandry.<br>Horticulture.<br>Vet. Science.<br>Bacteriology.<br>Botany.<br>Entomology.<br>Physics.<br>Chemistry. | Mechanical Eng.<br>Electrical Eng.<br>Civil Eng.<br>Architecture.<br>Printing.<br>Mathematics.<br>Physics.<br>Chemistry. | Dom. Science.<br>Domestic Art.<br>Phys. Training.<br>Physics.<br>Chemistry.<br>Botany.<br>Entomology.<br>Bacteriology.<br>Architecture. |

The Preparatory Department as a separate teaching force was abolished and Principal Barnett was made assistant professor of mathematics with the understanding that he would have charge of the bookkeeping. The assistants will be designated as assistants in history, mathematics, or English according to the work they have been doing.

Miss Clemons' resignation was accepted and Miss Butterfield was selected to fill the vacancy.

The Board ordered that Experiment Station publications be limited to scientific bulletins setting forth the results of actual experiments and that all popular and informational bulletins be issued by the extension department.

All exhibits at fairs, and assignment of judges and speakers be made under the supervision of the extension department.

Dr. C. M. Brink and family will spend the vacation at their summer home, on the banks of Bass Lake, near Hayward, Sawyer county, Mich. Doctor Brink and Raymond left on the 22nd, to be followed in a few days by the others.

### *The Student Council.*

For many years there has been from time to time more or less agitation among the students looking toward the establishment of a student council. These movements have usually not been altogether opportune in that they occurred upon an occasion of some friction between the students and the Faculty. The relations between these two bodies have never been more harmonious than they have throughout the year just closed, and those interested in the organization of a council took advantage of the situation and have for several weeks been discussing the matter in its various aspects. A joint committee from the several classes had several conferences with President Nichols, who has from the first looked favorably upon such an organization and to whom most of the credit is due for its final successful inauguration. A committee from the Faculty was appointed to confer with the student committee and the constitution agreed upon by the committees was adopted by each of the classes and by the Faculty. It is as follows:

#### ARTICLE I.—Name.

SECTION 1. The name of this organization shall be the Student Council of the Kansas State Agricultural College.

#### ARTICLE II.—Object.

The object of the Student Council shall be:

SECTION 1. To act as a representative body before the governing officers of the College in all matters that concern the individual students, student organizations, or the student body as a whole.

SEC. 2. To act as a body of mediation between different student organizations or enterprises whenever such service is sought by such organizations or enterprises.

SEC. 3. To take cognizance of all matters that pertain to the good name and scholarship of the student body to the end that high standards of honor on the campus and elsewhere may be maintained.

#### ARTICLE III.—Authority.

SECTION 1. All acts of the Council on matters touched by the ordinances, rules or regulations of the Board of Regents or Faculty shall be subject to the approval of the Board or Faculty, respectively, before becoming effective, and all acts shall be submitted to the President of the College or his representative for decision concerning their relation to such ordinances, rules, or regulations.

#### ARTICLE IV.—Privileges and Duties.

SECTION 1. The Council may take the initiative in any matter which would properly be subject to their deliberation.

SEC. 2. It shall be the duty of the Council, with the consent of the Faculty, to appoint representatives to meet with the Faculty for the purpose of discussing matters relating to the student body, or parts thereof.

SEC. 3. At each meeting of the Student Council a committee from the College Faculty may be present to participate in the discussions.



## ARTICLE V.—Qualifications.

SECTION 1. Any person eligible for membership must meet the following requirements: (1) He must be fully classified without condition, according to College requirements, with the class from which he is chosen. (2) In order that a man may be eligible as a candidate for the Student Council, he must have passed the equivalent of fifteen class hours weekly during the term preceding the one during which he is to serve on the Council.

## ARTICLE VI.—Nomination and Election.

SECTION 1. At the regular election of officers each term, beginning with the fall term 1909, each class shall nominate a candidate for the Council.

SEC. 2. At the first regular meeting of each class following the nomination, the classes shall elect members, by ballot, as follows: Seniors 4, juniors 3, sophomores 2, freshmen 1.

SEC. 3. The students of the sub-freshman class may elect a delegate, who shall have the privilege of speaking on subjects pertaining to his class, but who shall not vote in the Council.

SEC. 4. The members of the Council shall serve until their successors are elected and qualified.

## ARTICLE VII.—Voting.

SECTION 1. All voting shall be by ballot.

## ARTICLE VIII.—Officers of Student Council.

SECTION 1. The officers of the Council shall be president, vice-president, and secretary-treasurer.

## ARTICLE IX.—Duties of Officers.

SECTION 1. It shall be the duty of the president to preside at all meetings of the Council, to enforce observance of the rules and ordinances, to appoint all committees not otherwise provided for, to sign with the secretary all writings binding upon the Council, to see that all members are notified of meetings, to exercise a supervisory control over the interests of the organization, and to perform such other duties as may pertain to his office.

SEC. 2. The vice-president shall assume the duties of the president when that officer is absent.

SEC. 3. The president shall have no vote except in the case of a tie.

SEC. 4. The secretary-treasurer shall keep a record of proceedings of all meetings, carry on the correspondence and attend to such other duties as usually fall to the secretary. He shall have charge of the funds and pay all bills when the order is signed by the president. He shall, together with the president, sign all writings binding upon the Council.

## ARTICLE X.—Meetings.

SECTION 1. Regular meetings of the Council shall be held the second Wednesday of each calendar month during the College year.

SEC. 2. The president shall call a special meeting at the request of four members.

## ARTICLE XI.—Quorum.

SECTION 1. Seven members shall constitute a quorum.

## ARTICLE XII.—Vacancies.

SECTION 1. Vacancies may be filled at any regular meeting of the class in which the vacancy occurs.

## ARTICLE XIII.—Adoption.

SECTION 1. This constitution shall go into effect when ratified by each class and the governing bodies of the College.

## ARTICLE XIV.—Amendments.

SECTION 1. Amendments to this constitution must be proposed at least one week before voting upon them and ratified by at least three of the classes.

It will be seen that the Council is not given final authority in any matters as yet, but it is hoped that through its agency many of the misunderstandings between students' organizations and between the students and the Faculty may be cleared up or avoided. The provision for Faculty representation in the discussions of the Council is for the purpose of insuring presentation of the Faculty point of view when important subjects are before the Council for consideration. Most of the difficulties arising between faculties and student bodies are due to lack of understanding of the students' view on the part of the faculty, or to lack of understanding of the point of view of the faculty on the part of students. It is hoped that this opportunity for free exchange of opinions will lead to a better understanding in the case of all questions likely to lead to controversy, and that continuous harmony will be the result.

It is also believed that the Council, representing as it does all of the academic classes, may be able to promote good feeling and to avoid entirely any serious clashing between organizations. The students also hope that this organization may grow into a potent factor in promoting the general welfare of the College in all ways. Its success will doubtless depend upon the sincerity and continuity with which it is conducted, and this will depend upon the character and standing of the student representatives chosen as members of the Council.

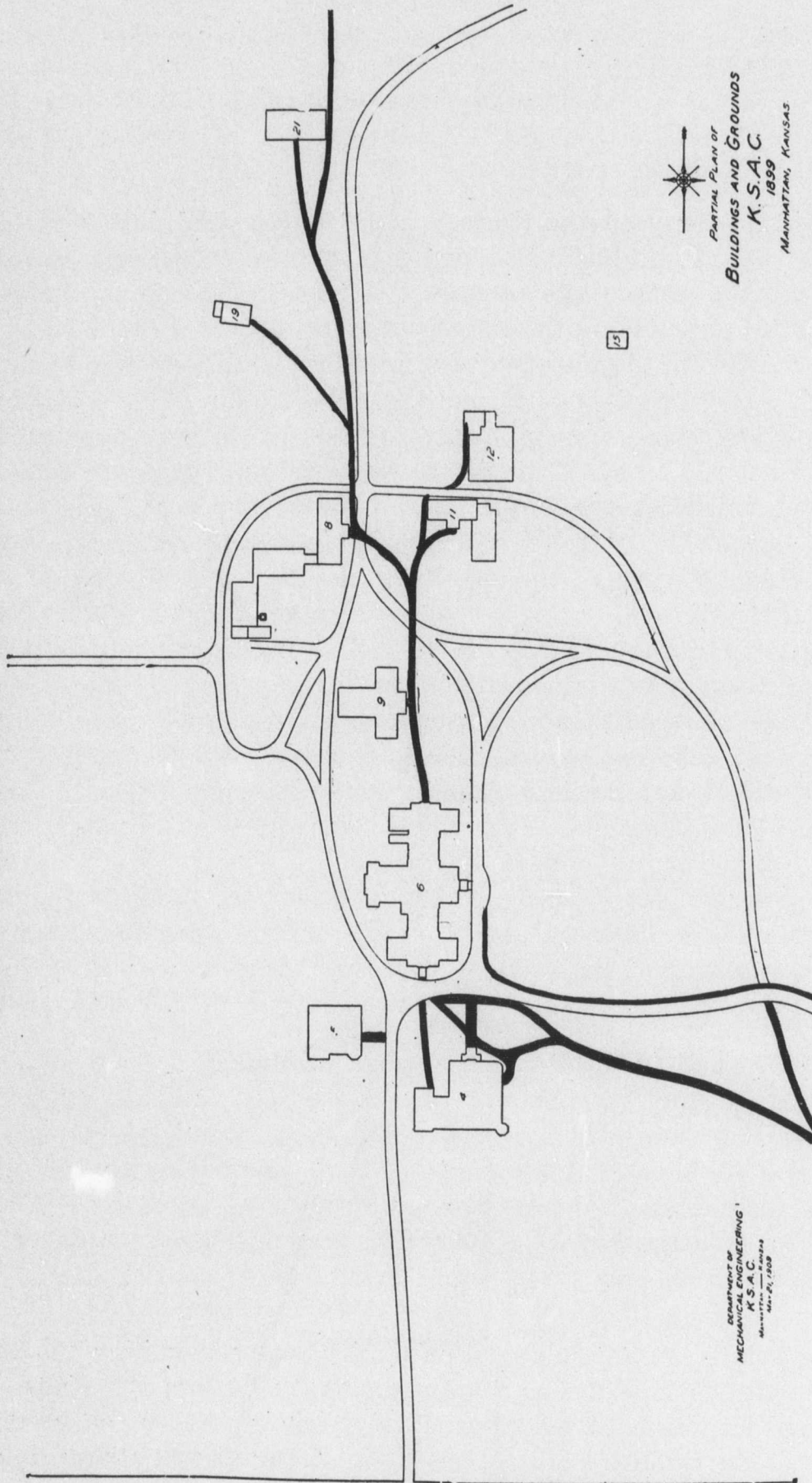
J. T. WILLARD.

A recent hail-storm did an enormous amount of damage at the Fort Hays Branch Experiment Station. Wheat, oats, barley, rye and speltz to the extent of 800 acres were completely ruined. Corn and Kafir-corn will recover. Forty acres of newly-seeded alfalfa were destroyed, also the hay crop on a large area. The cash loss is estimated at \$6000. The loss in respect to experimental results is large, but cannot be estimated in dollars.

The *Topeka Capital*, in an editorial, gives due recognition to the honor that has come to our State through the election of a Kansas born and Kansas bred scientist, E. F. Nichols, '88, to the presidency of Dartmouth College, but by a strange lapse states that he is a graduate of the University of Kansas.



*Kansas State Agricultural College, 1899.*

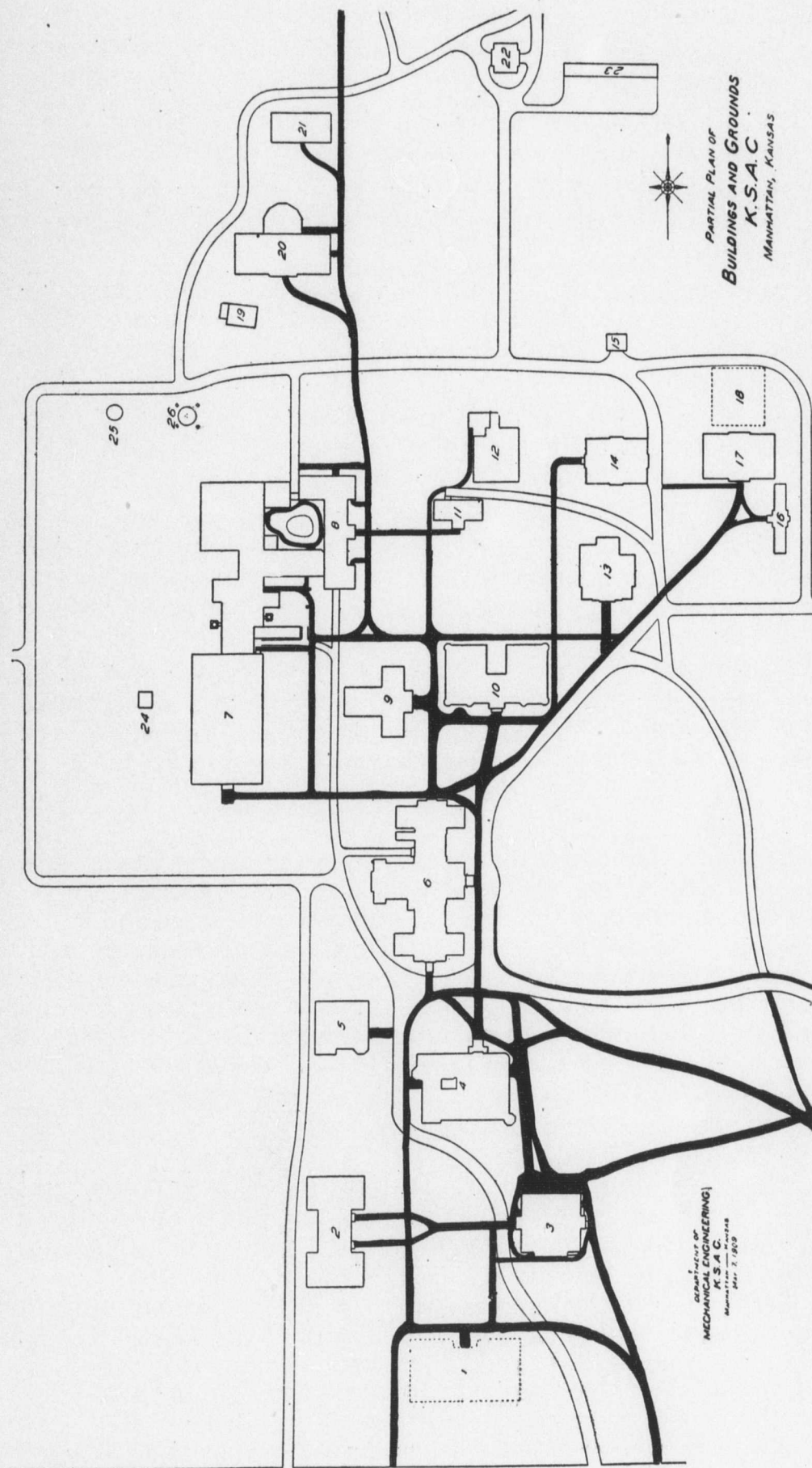


PARTIAL PLAN OF  
BUILDINGS AND GROUNDS  
K.S.A.C.  
1899  
MANHATTAN, KANSAS

DEPARTMENT OF  
MECHANICAL ENGINEERING  
KANSAS STATE AGRICULTURAL COLLEGE  
MANHATTAN, KANSAS  
MAR. 21, 1909

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. Library (Fairchild Hall). 5. Domestic Science (Kedzie Hall). 6. Main Building (Anderson Hall). 7. \_\_\_\_\_ 8. Shops (Mechanic's Hall). 9. Chemistry Building. 10. \_\_\_\_\_ 11. Horticultural Building and Greenhouse. 12. Experiment Station and Greenhouse. 13. \_\_\_\_\_
14. \_\_\_\_\_ 15. Horticultural Barn. 16. \_\_\_\_\_ 17. \_\_\_\_\_ 18. \_\_\_\_\_ 19. Farm House. 20. \_\_\_\_\_ 21. Armory and Veterinary Building. 22. \_\_\_\_\_
23. \_\_\_\_\_ 24. \_\_\_\_\_ 25. \_\_\_\_\_ 26. \_\_\_\_\_

Kansas State Agricultural College, 1909.



1. Location for \$100,000 Armory and Gymnasium, to be built during 1909-'10. 2. Domestic Science and Art Hall. 3. Auditorium. 4. Library (Fairchild Hall). 5. Printing Building (Kedzie Hall). 6. Main Building (Anderson Hall). 7. Mechanical Engineering Hall. 8. Shops (Mechanic's Hall). 9. Women's Gymnasium. 10. Physical Science Hall. 11. Old Horticultural Hall (to be razed). 12. Experiment Station and Greenhouse (to be razed). 13. Agricultural Hall. 14. Dairy Hall. 15. Horticultural Barn. 16. Greenhouse. 17. Horticultural Hall. 18. Location for \$10,000 Greenhouse, to be built during 1909-'10. 19. Custodian's Residence. 20. Veterinary Science Hall. 21. Old Armory. 22. Seed House. 23. Horse Sheds. 24. Gas Producer. 25. Gasometer. 26. Water-tower.



**Local Notes.**

Miss Margaret Butterfield left Tuesday for a two-weeks' vacation in Colorado.

Dr. J. V. Cortelyou and family will visit Mrs. Cortelyou's people in Omaha this summer, leaving here about the first of July.

J. E. Smith, assistant in the Botany Department, is studying at the University of Chicago this summer, taking several courses in botany and geology.

Mrs. McCormick and the children will leave in a few days for Montana, where they will spend the summer with her people. The professor will remain here on the ground for at least most of the time.

Messrs. King, Whelan, and Newman, of the Chemistry Department, will study at the University of Chicago this summer. Mr. Whelan will return about the first of August, the others remaining through the entire vacation.

Dean H. J. Waters, Director of the Missouri Experiment Station, and Mrs. Waters were interested visitors at the College Commencement week. They met many of the Faculty and will receive a cordial welcome should they come again.

Professor Freeman left this week for Pawnee Rock and other points in western Kansas where he will investigate a new disease of wheat. He will also make some studies of smut of wheat, but his principal work will be in connection with the bindweed.

Dr. J. D. Walters left Monday afternoon, June 14, on a well-earned vacation. He will be absent the entire summer, his chief purpose being a visit to his daughter, Hilda (Walters) Emch, and her husband, Dr. Arnold Emch, at Solothurn, Switzerland. Mrs. Walters accompanied the doctor. They were to sail June 19 by the steamer *Lapland* for Antwerp, Belgium, proceeding from there up the Rhine valley to Basel. They will make various other trips into Italy, France, and Germany, and their many friends here will wish them thorough enjoyment of their long anticipated journey.

On the 11th instant a sale of pure-bred Shorthorn cattle was held at the College. The animals sold included eighteen head from the College herd, fourteen from that of T. K. Thompson, Dover, Kan., and eight from that of Senator T. J. Wornall, Liberty, Mo. The weather was very unfavorable, but the attendance was fair and included about fifty buyers. Geo. Bellows, Maryville, Mo., and L. R. Brady, Manhattan, Kan., were the auctioneers. The prices were regarded as fair on the whole, though some of the stock should have brought more. The College has up to this time not possessed funds sufficient to enable it to purchase Shorthorns of very high quality, and while the animals sold were good the hope is that they may be replaced by better. Mrs. Van Zile and the Domestic Science Department prepared an elegant luncheon for the visiting buyers.

Prof. R. R. Price will take several courses at the University of Michigan the first part of the summer which will be of value to him in his work in history, though not directly in that line. Mrs. Price will spend the time with home folks in McPherson county.

Miss Margaret Butterfield, who has been elected Secretary to succeed Miss Clemons, has been the chief assistant in the office for some years and is thoroughly familiar with the financial records of the College. During the absence of Miss Clemons for two months last summer and fall, she conducted the work to the satisfaction of all, and will no doubt successfully administer her responsibilities.

The most noticeable accessory feature of Commencement week was the new electric railway. Preliminary trips had been made previously, but the line began regular business Sunday, June 13, and is reported to have collected over five thousand fares Sunday and Monday. Of course, many rode for the novelty of the experience, but a large business was done succeeding days, and downtown people appreciated this convenient opportunity to ride to the College for the exercises of Commencement week. The line runs from the railway stations to Poyntz Avenue, along that avenue from Second street to Ninth, thence north to Fremont and west to Eleventh—that is, the northeast corner of the City Park—thence north to Moro and west to the south foot-path entrance to the College grounds near the Auditorium. There is some work still to be done on the track to promote the efficiency of the service, especially at the corners, but on the whole the public is very enthusiastic over this latest and long step in urban advancement. The cars are marked "Manhattan City and Interurban Railway," and all eagerly hope that the interurban facilities suggested will not be long delayed.

Lorena E. Clemons, '94, has resigned the secretaryship of the College. The confinement and responsibility of the office have taxed her strength to such a degree that she thinks it best to rest and recuperate for a year or more. Miss Clemons began serving her apprenticeship in the office, immediately after graduation, under the guidance of President Fairchild and Secretary Graham. Her alert mind, perfect integrity, industry and capacity for concentration of thought amidst disturbing surroundings won complete approval for her, and in 1899 she was elected Secretary. There has never been a moment since when the affairs of her office would not have successfully borne the most searching investigation. With the growth of the College the details in her charge have multiplied enormously, and many have necessarily been intrusted to the immediate care of subordinates. She has, however, remained mistress of the situation. Her accuracy, unfailing sweet temper and willing courtesy have created for her the highest esteem. College officers and students alike regret her leaving and wish for her Heaven's choicest gifts—health, friends, and congenial occupation.



Professor Van Zile left Monday evening to spend her vacation in Iowa.

The full-page plans printed elsewhere present with almost startling force the great material growth that the College has made during the last ten years. When one in imagination pictures the simultaneous transformation caused by the growth of trees and shrubbery, the need of a guide for the students of earlier days is readily understood.

### *Alumni and Former Students.*

Ada Rice, '95, Jessie A. Reynolds, '06, and Birdie Secrest, '92, have started for Europe and will undoubtedly have a most enjoyable trip.

Marcia E. Turner, editor of the *Alumnus*, and her mother will spend the summer with her brother, H. C. Turner, '01, near Ft. Bayard, N. M.

Mrs. G. W. Evans, well known to hundreds of students, died June 14 at the residence of her son-in-law, Dr. L. B. Jolley, '01, North Chicago, Ill. She was buried at Manhattan, the funeral services being held on the 18th.

Changes of address: A. S. Stauffer, '04, 725 Elm street, Beloit, Wis.; Ella E. Peck, '99, Gotebo, Okla.; L. M. Jorgensen, '07, Greenleaf, Kan.; Jas. R. Coxen, '07, Pittsburg, Kan.; J. W. Bayles, '89, Clay Center, Kan.; F. W. Christensen, '00, State College, Pa.; O. H. Gish, '08, care of U. S. Weather Bureau, Lincoln, Neb.; Geo. G. Goheen, '08, Manhattan, Kan.; Grace E. Leuszler, '09, Linn, Kan.; E. Jeannetta Zimmerman, '91, and Kate Zimmerman, '00, Bendena, Kan.

Several graduates of the College have been elected to assistantships here, as follows: M. R. Alleman, '09, assistant dairy commissioner; E. F. Kubin, '09, house surgeon in the Veterinary Department; R. H. Wilson, '09, assistant in bacteriology; Chas. Doryland, '08, assistant in agronomy; Helen Huse, '08, assistant in domestic science. Assistants in farmers' institute and extension work: C. V. Holsinger, '95, horticulture; G. C. Wheeler, '95, general farming, institute and demonstration work west of Manhattan; J. E. Brock, '08, special secretary for demonstration work; Frances L. Brown, '09, home economics.

Dr. S. W. Williston, '72, professor of paleontology in the University of Chicago, has recently issued the third edition of his *Manual of North American Diptera*. This is reviewed at length in *Science*, and from that notice the following concluding paragraph is culled: "Typographical or any other sort of perfection must not be demanded in a contribution offered as a gift to science after years of strenuous and wholly gratuitous effort. Professor Williston has acquitted himself well, and has given us a work which no one else in the world could have produced; one not approached in any other large order of North American insects. Nay, he has done still more—he has printed it practically at his own expense, and will not be reimbursed until almost the whole edition is sold.

Because I happen to know this I wish the entomological public to understand how great their debt really is. And Professor Williston never occupied an entomological position in his life. He has given *himself* to science, and that is the greatest offering any man can make."

Farmers' Bulletin No. 361 is by H. N. Vinall, '03, and treats of "Meadow Fescue, Its Culture and Uses." It is a pamphlet of twenty-two pages which treats fully concerning the culture of this grass, better known as English blue-grass, and its characteristics and uses. It seems that eastern Kansas leads the entire country in the production of Meadow Fescue, and the bulletin gives considerable attention to the status of this crop in that region.

F. W. Haselwood, '01, and L. Maude Zimmerman, '02, were married Thursday, June 3, in Provo City, Utah. The church was elaborately decorated with ribbon, cut flowers, and potted plants, and the guests were the faculty of Proctor Academy, the members of the Eastern Star Chapter, the Proctor High School, and intimate friends of the couple. Miss Zimmerman has been a member of the Proctor Faculty for two years, teaching sciences and mathematics in that institution. Mr. Haselwood is a civil engineer for the Western Pacific Railroad Company. They left immediately for the West and will be at home at 903 Filbert street, Oakland, Cal.

The *Boston Evening Transcript*, June 9, devotes several columns to Prof. E. F. Nichols, '88, who, as previously noted, has recently been elected president of Dartmouth College. The comments of the *Transcript* and other papers of the East are highly complimentary, but are too lengthy for extended quotation. The following paragraph will give an idea of the general tenor of comment: "The selection of Professor Nichols to become the tenth president of Dartmouth is the result of over two years of assiduous effort on the part of the trustees to find a man to succeed President Tucker who would be acceptable to the alumni and undergraduates and at the same time fulfil the traditional requirements of the institution. The remarkable growth of the college from 315 to over 1200 students during President Tucker's fourteen years' presidency, with an increase of nearly \$2,000,000 in college property and a corresponding enlargement of the faculty, made the problem of selecting a new head particularly difficult. Concerning the selection of Professor Nichols, General Frank S. Streeter, of Concord, chairman of the committee of trustees in charge of the nomination of a successor to President Tucker, made this statement: 'The committee in its nominating and the trustees in their election feel the greatest enthusiasm at the prospect of such an administration as is promised in the assurance that Professor Nichols will take upon himself the duties of the presidency of Dartmouth College. His record as a scholar in his chosen field of physics, his ability as an administrator, his personal charm in social contact and his effectiveness as a speaker, are bound to establish him quickly in the confidence of those who have not known him before.'"



*Board of Instruction (concluded).*

|                                                                 |                                        |
|-----------------------------------------------------------------|----------------------------------------|
| Miss Ada Rice, B. S. (K. S. A. C.)                              | Instructor in English                  |
| Miss Ella Weeks, A. B. (U. of K.)                               | Instructor in Drawing                  |
| Miss Daisy Zeininger, B. A. (Fairmount)                         | Instructor in Mathematics              |
| Leonard W. Goss, D. V. M. (Ohio State University)               | Instructor in Veterinary Science       |
| Miss Ula M. Dow, B. S. (K. S. A. C.)                            | Instructor in Domestic Science         |
| Theo. H. Scheffer, A. M. (Cornell University)                   | Instructor in Zoölogy                  |
| Herbert H. King, M. A. (Ewing College)                          | Instructor in Chemistry                |
| John B. Whelan, M. A. (Nebraska)                                | Instructor in Chemistry                |
| Louis H. Beall, A. B. (Denison)                                 | Instructor in English                  |
| Roy A. Seaton, B. S. (K. S. A. C.)                              | Instructor in Mechanical Engineering   |
| William L. House                                                | Foreman of Carpenter Shop              |
| Louis Wabnitz                                                   | Foreman of Machine Shops               |
| Miss Ina E. Holroyd, B. S. (K. S. A. C.)                        | Assistant in Preparatory Department    |
| Ambrose E. Ridenour, B. S. (K. S. A. C.)                        | Foreman of Foundry                     |
| Miss Emma J. Short                                              | Assistant in Preparatory Department    |
| Miss Ina Cowles, B. S. (K. S. A. C.)                            | Assistant in Domestic Art              |
| Miss Kate Tinkey                                                | Assistant Librarian                    |
| Earl N. Rodell, B. S. (K. S. A. C.)                             | Assistant in Printing                  |
| M. Francis Ahearn, B. S. (Mass. Ag. College)                    | Assistant in Horticulture              |
| Miss Gertrude Stump, B. S. (K. S. A. C.)                        | Assistant in Domestic Art              |
| M. Sheldon Brandt, Ph. B. (Yale)                                | Assistant in Architecture and Drawing  |
| Chas. Yost                                                      | Assistant in Heat and Power Department |
| Earle B. Millard                                                | Assistant in Machine Shops             |
| J. T. Parker                                                    | Assistant in Woodwork                  |
| J. D. Magee, A. M. (Chicago)                                    | Assistant in Mathematics               |
| E. G. Meinzer, A. B. (Beloit)                                   | Assistant in German                    |
| Miss Florence S. Latimer, B. M. (Ferry Hall Seminary)           | Assistant in Music                     |
| Miss Marjorie Russell (Mechanics' Institute)                    | Assistant in Domestic Science          |
| Burton Rogers, D. V. M. (Iowa State College)                    | Assistant in Veterinary Science        |
| Miss Clara Willis (Framingham Normal)                           | Assistant in Domestic Science          |
| C. O. Swanson, M. Agr. (Minn.)                                  | Assistant Chemist, Experiment Station  |
| Edw. C. Crowley, Ph. B. (Yale)                                  | Assistant in Chemistry                 |
| Hugh Oliver                                                     | Assistant in Heat and Power Department |
| Miss Charlaïne Furley, B. A. (Fairmount)                        | Assistant in English                   |
| Miss Jessie Reynolds, A. B. (U. of K.)                          | Assistant in Preparatory Department    |
| Miss Mary F. Nesbit, A. B. (Illinois University)                | Assistant in Mathematics               |
| Miss Annette Leonard, A. B. (U. of K.)                          | Assistant in English                   |
| William C. Lane, B. S. (K. S. A. C.)                            | Assistant in Electrical Engineering    |
| Miss Flora C. Knight, A. B. (Uni. of Wyoming)                   | Assistant in English                   |
| Miss Grace H. Woodward (Boston School of D. S.)                 | Assistant in Domestic Science          |
| Miss Nellie Cave, B. M. (Univ. of Nebr.), (Chicago Music Coll.) | Assistant in Music                     |
| Miss Margaret Mack (K. S. N.)                                   | Assistant in Preparatory Department    |
| Edwin G. Schafer, B. S. (K. S. A. C.)                           | Assistant in Agronomy                  |
| Orin A. Stevens, B. S. (K. S. A. C.)                            | Assistant in Botany                    |
| Miss Mary W. Hancock (Mechanics' Inst.)                         | Assistant in Domestic Art              |
| S. W. McGarrah, A. M. (Grove City College)                      | Assistant in Mathematics               |
| Carl G. Elling, B. S. (K. S. A. C.)                             | Assistant in Animal Husbandry          |
| Kirk H. Logan, B. S. (U. of K.)                                 | Assistant in Physics                   |
| C. A. Arthur Utt, M. S. (Cornell College)                       | Assistant in Chemistry                 |
| Miss Florence Warner, A. B. (Illinois University)               | Assistant Librarian                    |
| Miss Anna Gordon, A. B. (Iowa College)                          | Assistant in Preparatory Department    |
| Miss Bertha M. Johnston (Simmons College)                       | Assistant in Domestic Science          |
| Harrison E. Porter, B. S. (K. S. A. C.)                         | Assistant in Mathematics               |
| E. L. Sieber, A. B. (Indiana University)                        | Assistant in Chemistry                 |
| C. S. Knight, B. S. Agr. (U. of Wis.)                           | Assistant in Agronomy                  |
| Earle Brintnall, B. S. (Iowa State College)                     | Assistant in Dairy Husbandry           |
| J. B. Parker, M. A. (Ohio State University)                     | Assistant in Entomology                |
| Allen G. Phillips, B. S. (K. S. A. C.)                          | Assistant in Poultry                   |
| Miss Gertrude Cannon, Bethany Col. and Oberlin Conservatory     | Assistant in Music                     |
| Miss Bertha Bisby                                               | Assistant in Preparatory Department    |
| Fred M. Hayes, D. V. M. (K. S. A. C.)                           | Assistant in Veterinary Science        |
| L. D. Bushnell, B. S. (Wisconsin)                               | Assistant in Bacteriology              |
| Miss Bertha Donaldson (Chicago University)                      | Assistant in Domestic Art              |
| Miss Elizabeth Putnam (Chicago Art Institute)                   | Assistant in Drawing                   |
| L. E. Petty, A. B. (Wabash College)                             | Assistant in Mathematics               |
| Jules C. Cunningham, B. S. (K. S. A. C.)                        | Assistant in Horticulture              |
| Miss Annie E. Lindsey (Simmons College)                         | Assistant in Domestic Science          |
| Amy Allen, B. S. (K. S. A. C.)                                  | Assistant in Printing                  |
| John E. Smith, B. S. (Oregon Ag. Col.)                          | Assistant in Botany                    |
| R. C. Wiley, B. S. (Oklahoma A. & M. College)                   | Assistant in Chemistry                 |
| D. Edmond Rudolph                                               | Band Leader                            |
| J. H. Hollar                                                    | Foreman of Blacksmithing               |
| Porter J. Newman, B. S. (Franklin)                              | Assistant in Chemistry                 |
| Wm. A. Lamb                                                     | Poultryman                             |
| Floyd Howard                                                    | Farm Foreman                           |